PB80-211303

The Consequences and Frequency of Selected Man-Originated Accident Events

(U.S.) Office of Radiation Programs
Washington, DC

Jun 80

U.S. Department of Commerce
National Technical Information Service
NTIS

BIBLIOGRAPHIC DATA SHEET

1. Report No.
EPA-520/3-75-016

2.

PB80-211303

4. Title and Subtitle
The Consequences and Frequency of Selected Man-Originated Accident Events

5. Report Date
August 1974

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
SAME

10. Project/Task/Work Unit No.

11. Contract/Grant No.
68-01-0492

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
Office of Radiations Programs (ANR-459)
Washington, D.C. 20460

13. Type of Report & Period Covered
Final Report

14.

15. Supplementary Notes

Reproduced from best available copy.

16. Abstracts

Data are compiled for man-caused accidents where there were ten or more fatalities thirty or more injuries, or three million dollars or more in property damage for the period, 1953 through 1973. Data are also summarized in various classifications, such as transportation, hazardous materials, etc. A bibliography is included. Discussions are made of the limitations on use of the data, difficulties when comparing the data classes, and problems encountered in identifying voluntary or involuntary risks. This compilation may be quite useful as basic information for accident risk assessments. However, accidents caused by natural events are not included.

17. Key Words and Document Analysis. 17a. Descriptors

Accidents
Hazardous Material
Transportation
Radioactivity
Radionuclides

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

REPRODUCED BY
NATIONAL TECHNICAL INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

18. Availability Statement
Release unlimited

19. Security Class (This Report)
UNCLASSIFIED

20. Security Class (This Page)
UNCLASSIFIED

21. No. of Pages
233

22. Price

EPA-520/3-75-016

THE CONSEQUENCES AND FREQUENCY OF SELECTED MAN-ORIGINATED ACCIDENT EVENTS

Final Report
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Prepared under Contract NO. 68-01-0492
Competitive Task Order WA 74-R024

JUNE 1980

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I. INTRODUCTION

The purpose of this study has been to conduct a comprehensive data and literature search to determine the magnitude and likelihood of man-originated high consequence/low probability accident events from which quantitative risk assessments could be made. Hopefully, this paper will contribute to an understanding of the levels of risk involved in activities affecting the public so that policy makers will be better equipped to make assessments of what is an "acceptable level of risk."

The concept of risk implies the possibility of a quantified measure based on the consequences of, exposure to, and probability of an event, and thus serves to reduce the uncertainty surrounding the activity. No attempt has been made in this report to include a quantification of, or commentary on, such risks themselves. What has been provided is the base data from which such an assessment could be made. It should be noted that the data gathered for this report permit such an analysis only on the macro level, based on aggregate past accident experience. It does not allow for analysis on the micro level, of the risk involved in specific situations. Such a micro analysis might include data on the weather conditions at the scene of an accident, or of the toxicity and flammability of a substance (such as can be found in analysis by Little, and Lippian).

At the outset of the study it was apparent that we would have to define an operational meaning of the term "man-originated, low probability, high consequence, accident." The following paragraphs describe the definition we used for the purpose of preparing the chronology of accidents. We hasten to add that our definition represents an inherently arbitrary choice from among several alternative definitions.

Perhaps the best definition of what may be classified as an "accident" is provided by Suchman, listing six parameters by which an event may be diagnosed; degree of expectedness, avoidability, intention, warning, negligence and duration of occurrence. By this conception, the less an event could have been anticipated or avoided, the less it was the result of deliberate action or negligence, and the shorter the duration, the greater is the likelihood that the event will be labelled as an accident. While the above conception is useful in understanding the general accident phenomenon, it does not aid in distinguishing a high consequence accident from the vast majority of accidents. Consequently, it is necessary to arrive at a definition of a catastrophic event in specific terms which can be readily abstracted from accident reports. From a preliminary examination of the data gathered from a variety of sources it was determined that the presence of one of the following criteria would be sifficient to define an unintended event as a high consequence, low probability accident:

A. ten or more fatalities

B. thirty or more injuries

C. three million dollars or more in property damage.

The use of the above criteria isolates the truly infrequent, catastrophic incidents, while at the same time providing a rich set of data from which meaningful analyses can be made. It should be remembered that natural disasters, such as floods, hurricanes and earthquakes, and one type of man-originated accident, nuclear reactor-cycle accidents are not part of the province of this study.*

In order to restrict the study to manageable proportions considering the time available, the project was limited to the accident experience of the United States in the period 1953-1973. It is conceivable that by considering only this time period we missed the occurrence of an extremely rare type of accident which perhaps hasn't occurred since 1953. On the other hand it was thought that safety and regulatory mechanisms before this period may have been sufficiently different from the present situation that such information would not be as useful to the policy maker today. In the same vein the study was restricted to the United States, as to do otherwise would have required an extraordinary amount of time and because it was thought that accidents occurring in the United States, or by United States organizations outside its borders (such as U.S. military or commercial aircraft crashes abroad) would be most relevant to government agencies.

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* Our search revealed no nuclear reactor cycle accident which would have met our criteria.

A review of the literature indicates that there apparently never has been an attempt to compile a complete listing of high consequence accidents. Therefore, one task of this study has been to compile a chronology of such incidents. It may be found in Chapter III.

Specific attention was paid to distinguishing between those accidents which involved risk only to voluntary participants, by whom the risk may be said to be accepted, and those which resulted in consequences to "involuntary" victims, on whom the risk may be said to be imposed. As defined by a special National Transportation Safety Board study, "voluntary risk-taking is predominantly economically oriented while involuntary risk taking often involves unawareness of the risk and non-involvement in the decision process. Involuntary risk takers ... rely on their political institutions to act on their belief in establishing risk levels. Problems inherent in applying this concept will be discussed in the following section.

We have given particular attention to incidents involving hazardous materials because of the potential for both high consequence and involuntary risk, such as in the event of explosion of railroad tank cars, chemical plants or trucks carrying dynamite.

To make a risk assessment it is necessary to have at one's disposal a measure of exposure to that accidental possibility. The exposures provided in this report are not measures of an individual's exposure to such accidents, such as the total number of hours one is at risk, as is used by Starr. They are measures of the miles or hours which planes, for example, travel, or the number of ton-miles commodities are carried, or the total number of establishments, as with chemical plants and hotels. We know, for example, how many ton-miles petroleum is carried by water in a particular year, but not how many people or the number of hours which residents along the routes of the tankers are exposed to the risk of explosion. Further comments on interpretation of the exposure data are given in Chapter II, and the data are presented in Chapter IV.

Finally, for each chapter a list of references is provided for those sources which were directly quoted in that section. The paper concludes with a final bibliography including a complete list of all contacts made during our search and a list of all articles of related interest.

II. PROBLEMS OF DATA INTERPRETATION

Those who would use this report should be aware of the limitations inherent in the data it provides. In this section we have attempted to summarize the major difficulties in interpreting and using the data provided in subsequent sections.

A. Voluntary and Involuntary Risk Classification

Classifying each accident within the chronology -- as involving voluntary or involuntary risk -- was problematic. Accidents whose description specifically noted casualties to bystanders or other victims, who could not reasonably be expected to have anticipated the possibility of such an event, were classified as having an involuntary risk factor; in the absence of such specific mention, accidents were classified as involving only voluntary risk. Undoubtedly, this type of arbitrary classification scheme, and its apparent lack of specificity, poses some very real problems which should be recognized before attempting to use these figures in any specific context.

An example of the weaknesses in this scheme can be found in the classification of accidents involving oil refineries and chemical plants. In most cases, available information was very sketchy -- sketchy in the sense that no clear indication was given regarding what segment, employees or residents of the surrounding area, suffered the casualties. For example, an explosion at a chemical plant could involve injuries to employees, residents of the surrounding area, or both. If the explosion involved injuries to employees only, the risk factor was considered voluntary on the grounds that those who work at the plant consciously accept the possibility of being involved in an accident when they make the decision to work there. If the explosion involved injuries to residents of the surrounding area, the risk factor was involuntary -- those who reside in the vicinity of the plant do not consciously accept the possibility of an accident at the chemical plant directly involving them.

Obviously, this interpretation is only one of many interpretations possible -- another being that those residing in the vicinity of the plant consciously accept the risk of an accident at the plant involving them when they decide to establish residence near the plant -- making the risk factor to them a voluntary one. A case can be made for the viability of either instance. Keeping the feasibility of those interpretations in mind, one could then deduce that there are very few instances of accidents involving involuntary risk -- again, classification is very difficult and not entirely reliable.

We fully recommend this classification -- voluntary or involuntary risk factor -- should be used always keeping in mind the apparent weaknesses of the scheme.

B. Exposures

Probably the most difficult aspect of interpretation of exposures used in this study is the seemingly impossible criterion of comparability. The lack of consensus between government departments regarding a basis from which to derive exposure rates is apparent. Each department has its own criteria -- to the extent that different departments examining the same aspect yield completely different results -- and relevant comparability is almost impossible.

For example, exposure rates for waterborne commerce are in ton-miles; rates for the airlines are in miles, hours and departures; rates for the railroads are in tons, carloads, miles, passenger miles and miles of passenger trains; etc. Obviously, the comparability of these measures is extremely difficult -- and without some form of conversion criteria -- almost impossible. The probability of drawing any clear, concise information using these different measures of exposure is almost nil -- a comparison of unlike things can only yield an incorrent answer. Therefore, all exposures should be examined only within their specific modal context -- comparison with other modes is entirely illogical

Another difficulty with exposures in this study -- one not as apparent -- is the exclusion of exposures involving involuntary risk.

The exposures given represent totals for each mode, and if accident rates were computed, would signify the probability of an individual travelling on a certain mode suffering an accident -- be it either death or injury. That's what the exposures represent -- what they don't represent is the probability of an individual not travelling on that mode suffering an accident from that mode involuntarily -- i.e., an airplane crashing into an apartment building and killing people in the apartment. Granted, these particular exposures would be extremely difficult to compute, but it must be recognized as a very important facet that at some point must be dealt with.

To sum up, exposure rates in this study should be considered separately, -- viable comparison isn't feasible and modal autonomy must always be recognized. A viable comparison can only be achieved through conversion of relevant data -- something not explored in this study. Also, the importance of involuntary risk exposures must be recognized and dealth with -- something that can only add to the relevance and readibility of future studies.

C. Injury and Property Damage Data

Reference must be made in this section to an always present difficulty in data interpretation -- that of determining to what extent injury and property damage data is accurately reported and utilized.

Some questions that may arise in making this determination are: Injuries can be of many degrees -- which are to be reported, and do all sources report the same way? Are minor cuts and burns really injuries? Who sets the criteria for property damage? If a plane crashes, does the report list the plane as lost, or give a property damage figure, or both -- and if the property damage isn't given, does one assign one? How close are the reporting procedures -- what are they comprised of? Etc.

In this study we have provided property damage data only for those accidents for which specific dollar amounts were available (primarily from The Fire Journal). If no such information were cited, no property damage figure was given, even though all the events reported here must have resulted in some property damage, and in some cases (as in commercial airline crashes), this damage may be substantial. These limitations must be kept in mind when interpreting the data provided.

D. High Consequence Accidents and Related Magnitude

It must be noted that the criteria used as "high consequence" -- ten deaths, thirty injuries, $3 million property damage -- are completely arbitrary ones. These particular criteria were selected because of the reporting procedures of the organizations this study encompassed. Particular note must be taken of the use of such criteria throughout this study -- all modes are considered in the same context, which isn't necessarily representative of what high consequence might actually be for individual accidents/mode. In conjunction with this, this very same criteria eliminates many accidents which are high consequence, in their own, but fail to meet our criteria.

For example, if a private plane carrying four people were to crash and all were killed, the accident wouldn't be listed in the chronology in the following section -- it wouldn't meet the established criteria, although undoubtedly of high consequence -- all aboard the plane were killed (100% fatality rate). Now, if a train crashes and thirty passengers are injured, regardless of the seriousness of their injuries, the accident would meet our criteria, although obviously not of the same severity as the plane accident, and would be included in the chronology. Obviously, we've eliminated an extremely high consequence accident -- 100% fatality rate -- and included an accident that meets our criteria, but isn't of the severity of the one we've eliminated.

An apparent double standard -- one that must be lived with, and can be, as long as it's recognized as such. The consequences of an accident are not necessarily indicative of the magnitude of the risks involved. The potential for loss/mode varies with each mode --

precisely the way this material must be reviewed and used. If used in any other way, many misinterpretations are possible -- and in most cases, probable.

E. Aggregate Data

There is a definite danger in looking only at the aggregate data presented in this study -- it tends to mask aspects within categories that are more receptive and indicative of the risks identified. Essentially, the accidents that happen most often, and pose the greatest risk, are hidden in the aggregate data of the classificatory scheme, presenting an abstract, and for the most part, not complete representation of the risk involved.

For example, the number of plane accidents, and the risks experienced, involving crashes on take-off, landing, or landing approach are much greater than those involving crashes in flight. Therefore, it's logical to assume that the greatest risks are experienced within a few minutes of take-off or landing, but, aggregate data presents only total accident figures and inadvertantly shields the relevance of these individual aspects -- individual conciseness necessarily gives way to aggregate generalities.

Without much doubt, the more thoroughly one explores the elements involved, the more relevant, and concise, the material becomes.

The aggregate data in this study must be used within this context -- it's an excellent source of general information, and must be used only for interpretations at that same level. Use at different levels will most likely yield incorrect interpretations, erroneous decisions and unclear representations.

F. Other Problems

What is defined as an accident in this study is the quantifiable culmination of a "chain-of-events" -- undoubtedly, not a completely accurate measure. Any accident must involve a chain-of-events -- a sequence of happenings, building on the previous one and initiating the next. Our criteria doesn't sufficiently deal with this sequence -- it deals only with the final stage, the quantifiable consequences. It should be pointed out that it is impossible to compute risks in this chain-of-events using our criteria -- they are not designed to do that.

Risk assessments, using the data presented in this study, should, and can only be, viable if made in relation to the end result. Probabilities can be computed for accidents occurring, but not for any event in the sequence happening, or the initiation of another "link" in the chain occurring. The data doesn't possess this built-in feature and shouldn't be used as if it did.

Finally, as a closing thought, it should be noted that the material presented in this study is as inclusive as possible -- it represents the fullest, most accurate material available from the sources explored -- but, and this is a very important point, there is no way of knowing just how complete the data really is. The likelihood of acknowledging all accidents meeting the criteria established in this study, within the stipulated time-frame, is far too small to even attempt to compute. Again, this study is as inclusive as possible -- but it must be remembered that it isn't all inclusive. Although it may be the best available compilation and presentation of material on this particular subject, it shouldn't be considered the ultimate authority.

G. Omission of Drug Data

Data involving drugs and drug related fatalities, have been omitted from this study because of the difficulty of determining the extent their use contributed to the reported deaths. It must be realized that the possibility of establishing a link between a certain drug and the subsequent death is almost impossible -- a degree of responsibility would have to be quantified for each link in the chain in order to make such a determination.

III. CHRONOLOGY OF ACCIDENTS, 1953-1973

A. All Accidents

1. Chronology of All Accidents, 1953-1973

a. Criteria: 10 Deaths, 30 Injuries, $3 Million Property Damage

b. Sources:

1) *The World Almanac and Book of Facts*, 1954-1974
2) *Fire Journal*, 1954-1974
3) Red Cross Compilation, 1964-1973
4) National Transportation Safety Board, Aircraft Accident Compilation, 1964-1972
5) *New York Times Information Index*, 1969-1973
6) Coast Guard Compilation, 1970-1973
7) Hazardous Material Incident Reports, 1971-1973
8) U.S. Air Force Compilation, 1964-1973

c. Averages:

1) Average number of incidents/year -- 39
2) Average number of deaths/year -- 657, per incident -- 17
3) Average number of injuries/year -- 594, per incident -- 15
4) Average number of incidents involving involuntary risk/year -- 3.1, per incident -- .08
5) Average dollar amount of property damage/year -- $95.6 Million, per incident -- $2.5 Million

d. Comments:

1) * denotes incidents reported by the U.S. Air Force without location. Attention should be given to the possibility that some of these incidents are combat (Vietnam) related accidents -- something impossible to discern from the information received from the U.S. Air Force.
2) Risk Factor --
V denotes voluntary risk associated with the accident
I denotes involuntary risk associated with the accident

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crashed in Flight/ Logan, Utah	40			1953	V	
Military Plane	Crashed in Flight/ Gridley, Calif.	12		$750,000	1953	V	
Military Plane	Crashed on take-off/ Tripoli	15			1953	V	
Passenger Plane	Crashed in Flight/ Gulf of Mexico	46			1953	V	
Military Plane	Crashed in Flight/ Random Island, NewFoundland	23			1953	V	
Passenger Plane	Crashed in Flight/ Decoto, Calif.	35		$500,000	1953	V	
Military Plane	Crashed in Flight/ San Antonio, Texas	10		$750,000	1953	V	
Passenger Plane	Crashed on landing approach/ Waskom, Texas	19			1953	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crashed after take-off/ Tokyo, Japan	129			1953	V	
Military Planes	Collision/ Stavanger, Norway	10			1953	V	
Military Plane	Crashed in Flight/ Savannah, Georgia	10			1953	V	
Military Plane	Collision--2 Bombers Tucson, Arizona	44		$250,000	1953	V	
Military Plane	Crashed in Flight/ Luzon, P.I	10			1953	V	
Military Plane	Crashed in Flight/ McChord Air Force Base, Washington	21			1953	V	
Passenger Plane	Crashed on landing approach/ Albany, New York	28			1953	V	
Military Plane	Crashed in Flight/ Louisville, Kentucky	23	19		1953	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crashed in Flight/ San Francisco, Calif.	19			1953	V	
Military Plane	Crashed in Flight/ Korean Straight	14			1953	V	
Military Plane	Crashed in Flight Ft. Bragg, N. Carolina	15	9		1953	V	Nine of 15 killed on drop when paratroopers were struck by flaming plane.
Military Plane	Crashed into housing area/ Guam	19	10		1953	I-V	
Military Plane	Crashed/ NewFoundland Canada	13		$500,000	1953	V	
Air Force Plane	Crashed/ Goore Bay, Labrador	2		$3.5 million	1953	V	
Military Plane	Crashed on landing/ Walker Air Force Base, New Mexico			$3.5 million	1953	V	
Plane	Ground explosion/ Fire/ Wichita, Kansas			$3 million	1953	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crashed on take-off/ Marsh Air Force Base, Calif.	3		$3 million	1953	V	
Military Plane	Crash/ Tuscon, Arizona	4		$3 million	1953	V	
Military Plane	Crash into mountain on landing approach, El Paso, Texas	9		$3.5 million	1953	V	
Passenger Train	Crashed into terminal/ Washington, D.C.		41		1953	I-V	
Passenger Train	Collision -- 3 Trains/ Ohio	22	62		1953	V	
Passenger Train	Derailment/ S. Carolina	4	125		1953	V	
Passenger Train-Car	Collision/ Texas	6	35		1953	V	
Brewery	Fire -- Fumes/ N. Jersey	14	30	$700,000	1953	V	Under construction

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Factory -- Metal Working	Explosion & Fire/ Illinois	35	36	$342,000	1953	V	
Fireworks Warehouse	Explosion/ Texas	4	95	$3 million	1953	V-I	4 deaths were resid. of apart. house, 4 blocks area demolished.
Plant	Fire / Michigan	2	20	$50 million	1953	V	
Chemical Plant	Explosion/ Tonawanda, New York	10	27	$550,000	1953	V-I	Demolish 12 nearby buildings; organic peroxides.
Nursing Home	Fire / Florida	33			1953	V	
Tenement	Fire/ Illinois	20			1953	V	
Army Installation	Fire/ Korea	3	40	$20 million	1953	V-I	Installation was part of 6,000 structures destroyed.
Stores	Explosion - Fire/ S. Carolina	10	5	$500,000	1953	V-I	Gas leak

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Warehouses	Fire/ N. Carolina	1		$5.8 million	1953	V	Defective electric wiring
General Motors Plant	Fire/ Michigan	6	15	$55 million	1953	V	
Military Installation	Fire/ Alaska			$10 million	1953	V	
Sewer	Explosion/ Ohio	1	64	$5 million	1953	I	
Marine Tankers	Explosion/ Collision/ Deleware	4		$12 million	1953	V	Due to navigation error--one tanker carried gasoline
Aircraft Carrier	Fire/ Mass.	37	39	$600,000	1953	V	Due to ignition of hydrolic fluid under pressure.
Aircraft Carrier	Explosion/ Guantanamio Bay	11	4		1953	V	
Freighter	Sank/ Lake Superior	10			1953	V	7 additional missing

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Training Boat	Capsized/ N. Carolina	20			1953	V	
Forest Fire	Calif.			$6.9 million	1953		15,000 acres destroyed--caused by careless smoking.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Private Plane	Crash in Flight/ Shreveport, Louisiana	12			1954	V	
Military Plane	Crash in Flight/ Hokkaido Island, Japan	35			1954	V	
Military Plane	Crash in Flight/ Alps, Germany	20			1954	V	
Military Plane	Crash in Flight/ Annapolis, Maryland	18		$250,000	1954	V	
Military Plane	Crash in Flight/ Nassau	10			1954	V	
Military Plane	Crash in Flight/ Yaku Shima Island, Japan	17			1954	V	
Military Plane	Crash in Flight/ March Air Force Base Calif.	14		$1.5 million	1954	V	
Passenger Plane	Crash in Flight/ Mason City, Iowa	11	8		1954	V	Weather

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash in Flight/ Rapid City, S. Dakota	25	2	$3.5 million	1954	V	
Military Plane	Crash on take-off/ Thule Air Base, Greenland	10	5		1954	V	
Military Plane	Crash on take-off/ Cavite, Philippines	12			1954	V	
Military Plane	Crash in Flight/ Willows, Calif.	11		$850,000	1954	V	
Military Plane	Crash in Flight/ French-Italian Alps, France	21			1954	V	
Military Plane	Crash in Flight/ Atlantic Ocean	42			1954	V	
Passenger Plane	Crash on landing/ Jamaica Bay, New York	26		$1.25 million	1954	V	
Military Plane	Crash in Flight/ Pennsylvania	10			1954	V	

CHRONOLOGY OF ACCIDENTS
1950-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military & Passenger Planes	Collision/ Saskachewan, Canada	37		$600,000	1954	V-I	1 plane crashed into house, killing occupant. Plane struck schoolhouse with 400 child - no hurt.
Military Plane	Crash/ Brownsville, Texas	10		$250,000	1954	V	
Military Plane	Crash landing/ Wichita, Kansas	2		$3 million	1954	V	
Military Plane	Ground-Explosion + Fire/ Hunter A. F. B., Georgia	1	2	$3 million	1954	V	
Military Plane	Crash on take-off/ Fairchild A. F. B., Washington			$5 million	1954	V	
Military Plane	Crash on take-off/ Davis-Monthan A. F. B., Arizona	4		$3 million	1954	V	
Military Plane	Crash on take-off/ Fairchild A. F. B., Washington	7		$5.4 million	1954	V	
Military Plane	Crash after landing/ Smoky Hill, A. F. B., Kansas			$3 million	1954	V	Ran off runway into ditch.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Olathe, Kansas	3		$3 million	1954	V	
Military Plane	Crash landing/ Johnsville, Pennsylvania			$9 million	1954	V	Flying radar laboratory.
Passenger Train	Derailment/ Nebraska		75		1954	V	
Passenger Train	Derailment/ Illinois	4	53		1954	V	
Passenger Train	Derailment/ California		35		1954	V	
Passenger Train	Derailment/ New York		35		1954	V	
School	Fire/ New York	14			1954	V	
Racetrack Viewing Stands	Collapse/ New Jersey		87		1954	I	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Fireworks Plant	Explosion/ Maryland	10	50	$327,500	1954	V	30 plant buildings destroyed. Broken light bulb in drying oven caused explosion.
Distilling Plant	Fire-Explosion/ Illinois	6	38	$7.1 million	1954	V	Building was struck by lightning. Casualties were fire-fighters.
Apartment	Gas Fumes/ New York	10			1954	V	
Coal Mine	Explosion & Fire/ W. Virginia	16		$250,000	1954	V	
Troop Ship & Landing Craft	Collision/ Korea	29			1954	V	
Aircraft Carrier	Explosion-Fire/ Rhode Island	103	200	$2 million	1954	V	Faulty catapult mechanism
Freighter	Sank/ Virginia	37			1954	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane/ Passenger Plane	Collision/ Burlington, Kentucky	15			1955	V	
Military Plane	Crashed in Flight/ Gulf of St. Lawrence, NewFoundland	13			1955	V	
Military Plane	Vanished/ Anchorage, Alaska	11			1955	V	
Passenger Plane	Crashed in Flight/ Albuquerque, New Mexico	16			1955	V	
Passenger Plane	Explosion/ SpringField, Missouri	12	23		1955	V	
Military Plane	Crashed in Flight/ Honolulu, Hawaii	66			1955	V	
Military Plane	Crashed in Flight/ Okinawa	10			1955	V	
Military Plane	Crashed in Flight/ Stuttgart, Germany	10			1955	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crashed in Flight/ Merced, Calif.	10		$1. 5 million	1955	V	
Military Plane	Crashed in Flight/ Southern Mexico	21			1955	V	
Passenger Plane	Crashed on take-off/ Chicago, Illinois	21	22	$750, 000	1955	V	
Passenger Plane	Crashed in Flight/ Newburg, Mo.	30		$750, 000	1955	V	
Military Plane	Collision/ Stuttgart, Germany	66			1955	V	
Passenger Plane	Crashed in Flight/ Laramie, Wyoming	66			1955	V	
Military Plane	Crashed in Flight/ Las Vegas, Nevada	14			1955	V	
Passenger Plane	Crash after take-off/ Seattle, Washington	27	46		1955	V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crashed in Flight/ Iwo Jima	10	1		1955	V	
Military Plane	Crashed into houses, Eilson A.F.B. Alaska	15	8	$1 million	1955	V-I	14 of the deaths civilians
Passenger Plane	Crash/ Jacksonville, Fla.	17		$1.5 million	1955	V	
Military Plane	Crash/ San Angelo, Texas	15		$3.5 million	1955	V	
Passenger Plane	Explosion of cargo/ Longmont, Colorado	44			1955	V	Sabotage
Military Plane	Fire/ Formosa	14			1955	V	
Military Plane	Fire/ Eilson A.F.B. Alaska	12			1955	V	
Military Plane	Fire/ Fort Worth, Texas	2		$3.5 million	1955	V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Fire/ Loring A.F.B. Maine			$3.5 million	1955	V	
Military Plane	Fire/ Point Lookout, Maryland	4		$3 million	1955	V	
Military Plane	Fire/ Lincoln, Nebraska	3		$6 million	1955	V	
Passenger Train	Derailment/ Arkansas	5	50		1955	V	
Freight Train/ Bus	Collision/ Tennessee	10	31		1955	V	
Electric Company	Fire/ Rhode Island			$7 million	1955	V	5 buildings destroyed by fire.
Oil Refinery	Explosion/ Whiting, Indiana	2	40	$16 million	1955	V-I	Destroyed 2 homes, damaged 18 others, killed 3 yr. old boy.
Cotton Finishing Plant	Fire/ Conn.			$5 million	1955	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Pier & Pier sheds	Fire/ S. Carolina	2		$3 million	1955	V	
Structure	Explosion & Fire/ Ohio	18	15		1955	V	
N. Y. Colliseum	Collapse during construction/ N. Y.	1	51		1955	V	
Hotel	Fire/ Illinois	25	15		1955	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash - Fire/ Alameda, Calif.	43			1956	V	
Military Plane	Crash/ Dayton, Ohio	11			1956	V	
Military Plane	Crash/ North Atlantic	17			1956	V	
Passenger Plane	Crash on take-off/ Pittsburgh, Pennsylvania	22		$750,000	1956	V	
Passenger Plane	Crash/ Nigeria	32			1956	V	
Military Plane	Crash on take-off/ McGuire A. F. B. New Jersey	45	21		1956	V	
Military Weather Plane	Crash/ Anchorage, Alaska	11			1956	V	
Weather Plane	Crash/ Sea of Japan	16			1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash into mountain/ Buena Vista, Colorado	12			1956	V	
Military Plane	Disappeared, Atlantic Ocean	59			1956	V	
Military Plane	Crash/ Off Maryland Coast, Atlantic Ocean	10		$500, 000	1956	V	
Military Weather Plane	Crash/ Yokota A. F. B., Japan	10			1956	V-I	9 crew 1 resident
Military Plane	Crash/ Bahrein, S. Arabia	12	26		1956	V	
Military Plane	Fire in Flight/ Dayton, Ohio	11		$1. 5 million	1956	V	
Military Plane	Fire in Flight/ Walker A. F. B. New Nexico	11		$2 million	1956	V	
Military Plane	Fire in Flight/ Castle A. F. B., Calif.	10		$8 million	1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Fire in Flight/ Tracy, Calif.	5		$8 million	1956	V	
Military Plane	Crash - Fire/ Lowry A. F. B., Colorado			$3.5 million	1956	V	
Military Plane	Crash - Fire - Collision Lincoln A. F. B., Nebraska	3		$6 million	1956	V	
Commuter Passenger Train	Derailment/ Los Angeles	30	50		1956	V	
Passenger Train	Derailment/ Maryland	6	100		1956	V	
Passenger Trains	Collision/ Massachusetts	13	100		1956	V	Collided with stalled com. train. Survs. were put on another train which had anot. accid. injur. 22 more.
Passenger Train	Collision/	20			1956	V	Switching error. Deaths were employees.
Elevated Passenger Train	Collision/ Chicago	7	150+		1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash into mountain/ Buena Vista, Colorado	12			1956	V	
Military Plane	Disappeared, Atlantic Ocean	59			1956	V	
Military Plane	Crash/ Off Maryland Coast, Atlantic Ocean	10		$500, 000	1956	V	
Military Weather Plane	Crash/ Yokota A. F. B., Japan	10			1956	V-I	9 crew 1 resident
Military Plane	Crash/ Bahrein, S. Arabia	12	26		1956	V	
Military Plane	Fire in Flight/ Dayton, Ohio	11		$1. 5 million	1956	V	
Military Plane	Fire in Flight/ Walker A. F. B. New Nexico	11		$2 million	1956	V	
Military Plane	Fire in Flight/ Castle A. F. B., Calif.	10		$8 million	1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Fire in Flight/ Tracy, Calif.	5		$8 million	1956	V	
Military Plane	Crash - Fire/ Lowry A. F. B., Colorado			$3. 5 million	1956	V	
Military Plane	Crash - Fire - Collision Lincoln A. F. B., Nebraska	3		$6 million	1956	V	
Commuter Passenger Train	Derailment/ Los Angeles	30	50		1956	V	
Passenger Train	Derailment/ Maryland	6	100		1956	V	
Passenger Trains	Collision/ Massachusetts	13	100		1956	V	Collided with stalled com. train. Survs. were put on another train which had anot. accid. injur. 22 more.
Passenger Train	Collision/	20			1956	V	Switching error. Deaths were employees.
Elevated Passenger Train	Collision/ Chicago	7	150+		1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Elevated Passenger Train	Fire/ Chicago	1	46		1956	V	
Passenger Train & Auto.	Collision/ Arizona	12			1956	V	All deaths were in automobile.
Church	Fire/ Baltimore	10			1956	V	Fire and panic at church function.
Grain Warehouse	Fire - Explosion/ Pennsylvania	3	84	$3 million	1956	V	
4 Petroleum Tanks	Explosion/ Texas	19	32		1956	V	
Cafe	Gas Explosion/	15	9		1956	V	
Pier	Fire - Explosion/ Brooklyn, N. Y.	10	246	$15 million	1956	V	Fire journal - $7.6 million
Churches	Fires/ Connecticut			$5.24 million	1956	V	Fire journal - $3 million

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Chemical Plant	Explosion/ Marcus Hook, Pennsylvania		8	$3 million	1956	V	Change of shifts probably prevented deaths. Amnonia
Machinery Reconditioning Plant	Fire/ Pennsylvania			$3 million	1956	V	
Plastics Plant	Explosion-Fire/ Schenectady, N. Y.	2		$4 million	1956	V	Naptha Vapors escaped.
Shipyard Pier	Fire/ Texas			$3 million	1956	V	Sparks from welding torch ignited escaped gas.
Tanker	Explosion/ Louisiana	25		$3.2 million	1956	V	During loading
Motor Boat	Swamped/ Florida	10			1956	V	
Freighter	Sank/ Norway	32			1956	V	Storm
Forest Fire	Calif.	11		$600,000	1956	V	Cost of suppession was 400,000. Deaths were firefighters.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Forest Fire	Arizona			$4.2 million	1956	V	Fire broke out during lumbering oper. and was spread by gale winds.
Forest Fire	Calif.	1		$6 million	1956	V	Destroyed 35 homes & 125 unidentified buildings.
Military Refueling Tanker	Explosion/ New Mexico	11			1956	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Weather Plane	Crash on take-off/ Eilson A. F. B., Alaska	12		$750,000	1957	V	
Military Passenger Plane	Collision/ Pacoima, Calif.	8	70		1957	V-I	6 crew, 2 residents killed, 70 child.-- crash into school house--both planes on trail run.
Passenger Plane	Crash after take-off/ Riker's Island New York City	20	64	$1.5 million	1957	V	
Military Plane	Disappeared/ Pacific	67			1957	V	
Military Plane	Crash at station/ Chincoteague, Virginia	11		$500,000	1957	V	
Passenger Plane	Crash/ Port Hardy, British Columbia	14			1957	V	
Military Plane	Crash/ Italy	11			1957	V	
Military Plane	Crash into sea/ Honolulu, Hawaii	10			1957	V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash into swamp/ New Bedford, Mass.	12	12		1957	V	
Passenger Plane	Crash into ocean/ Honolulu, Pacific	44		$1 million	1957	V	
Military Plane	Crash into sea/ Honolulu, Hawaii	19		$7.5 million	1957	V	
Military Plane	Explosion/ Limestone, A.F.B., Maine	8		$6.5 million	1957	V	
Military Plane	Ground Fire/ Lake Charles, A.F.B., Louisiana			$5 million	1957	V	
Passenger Plane	Explosion in Flight/ Skeatock, Kansas	2		$8 million	1957	V	
Passenger Plane	Ground Fire/ Miami, Fla.			$3.5 million	1957	V	
Military Plane	Crash-Fire/ Castle A.F.B., Calif.			$6.5 million	1957	V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash/ Fairchild A. F. B. Washington	8		$6.7 million	1957	V	
Freight train/ Truck	Collision/ Colorado	12	5		1957	V	
Business	Gas explosion-Fire/ Nevada	2	60		1957	V	Destroyed one business block.
Nursing Home	Fire/ Mo.	72			1957	V	
Tenement	Fire/ New York	17			1957	V	
Chemical Plant	Explosion/ Nitro, W. Va.	8		$5 million	1957	V	Evacuation of residents.
Propane Gas Storage Tank	Explosion/ Whiting, Indiana			$3 million	1957	V	
Grain Elevator	Fire/ Chicago			$5 million	1957	V	

CHRONOLOGY OF ACCIDENTS
19[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Hanger	Fire/ Washington			$5.2 million	1957	V	
Forest Fire	Calif.			$24.3 million	1957	V	24,800 acres destroyed.
Marine Tanker	Boiler room explosion/ Calif.	10	43	$500,000	1957	V	In ship yard.
Military Tanker/ Freighter	Collision/ Deleware River	10		$3.5 million	1957	V	
Tanker/ Freighter	Collision/ France	14			1957	V	
Auto's	Collision/ Illinois	11			1957	V	
Trucks	Collision/ N. Carolina	20	17		1957	V	
Military Truck	Overturned/ Kentucky	14	9		1957	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Coal Mine	Gas Explosion/ Virginia	37			1957	V	
Coal Mine	Explosion/ Virginia	11			1957	V	

CHRONOLOGY OF ACCIDENTS
1958-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injur/	Property Damage			
Military Planes	Collision/ Los Angeles, Calif.	48			1958	V-I	2 planes collided. 47 deaths on the planes, 1 on ground.
Military Plane	Crash into mountains Mt. Vesuvius, Italy	16			1958	V	
Military Plane	Disappeared/ Atlantic Ocean	22			1958	V	
Military Plane	Collision/ Okinawa	26			1958	V	
Military Plane	Collision/ Bridgeport, Texas	18			1958	V	
Passenger Plane	Crash/ Midland, Michigan	47			1958	V	
Military & Passenger Planes	Collision/ Las Vegas, Nevada	49			1958	V	
Military & Passenger Planes	Collision/ Brunswick, Maryland	12			1958	V	

CHRONOLOGY OF ACCIDENTS
195[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash on landing/ Nantucket, Mass.	24	9	$500,000	1958	V	
Military Plane	Disappeared/ Adana, Turkey	17			1958	V	
Military Plane	Collision/ Spokane, Washington	13			1958	V	
Military Plane	Crash/ Fayette, Idaho	19		$750,000	1958	V	
Military Plane	Crash into bay/ Placentia Bay, Canada	11			1958	V	
Military Plane	Crash in Flight/ Alaska	15			1958	V	
Military Plane	Crash on take-off/ Westover A. F. B., Mass.	15		$5 million	1958	V	
Military Plane	Crash - Fire/ Hunter A. F. B., Georgia	11		$1.3 million	1958	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash on landing/ Ellsworth A. F. B., S. Dakota	5		$10 million	1958	V	
Military Plane	Crash-Fire/ Georgetown, Deleware	4		$9.2 million	1958	V	
Military Plane	Ground-Fire/ Loring A. F. B., Maine			$8 million	1958	V	
Military Plane	Crash-Fire/ Hastings, Minnesota	7		$8 million	1958	V	
Military Plane	Crash-Fire/ Loring A. F. B., Maine	5		$3.5 million	1958	V	
Military Plane	Crash-Fire/ Altus A. F. B., Oklahoma	8		$8 million	1958	V	
Passenger Train	Derailment/ Wisconsin		50		1958	V	
Commuter Passenger Train	Through open drawbridge, N. J.	48			1958	V	

CHRONOLOGY OF ACCIDENTS
1958-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Railroad Tank Car	Explosion/ Niagra Falls, N. Y.		200	$1 million	1958	I	Detonation of car carrying nitromethane. Bldgs. within 1/2 mile radius were damaged.
Railroad Tank Car	Explosion/ Mount Pulaski, Illinois	2	40	$1 million	1958	I	Detonation of car carrying nitromethane.
Loft Building	Fire/ N. Y. C.	24	15		1958	V	
Home	Fire-Explosion/	10			1958	V	Heater exploded.
Missiles	Explosion/ New Jersey	10			1958	V	
Parochial School	Fire/ Chicago	95	73		1958	V	
Building	Explosion/ Calif.	10			1958	V	Intentional Bombing.
Aluminum Casting Plant	Explosion/ Illinois	6	40	$688,000	1958	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Paper Plant	Fire/ N. Carolina		45	$790,000	1958	V	
Amusement Park	Fire/ Virginia		45	$309,500	1958	V	
Metal Ball Manufacturing Plant	Fire/ Illinois			$3.5 million	1958	V	Destroyed plant & spread to nearby rubber plant.
Oil Refinery	Fire/ Signal Hill, Calif.	2		$9 million	1958	V	13 of 40 tanks were extens. damaged or destroyed. Deaths were employees.
Marine Tankers	Collision/ Rhode Island	18	33	$1.3 million	1958	V	Fog
Marine Tanker	Sank/ Lake Michigan	33			1958	V	Storm
School Bus	Into river/ Kentucky	27			1958	V	
Coal Mine	Explosion/ Virginia	22			1958	V	

CHRONOLOGY OF ACCIDENTS
1958-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Coal Mine	Gas Explosion/ W. Va.	13			1958	V	
Poisoning	Wood alchol poisoning/ N.Y.C.	27			1958	V	Drinking home-made liquor.
Paratroopers	Military training	5	137		1958	V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crashed in Flight/ Kingsport, Tennessee	10			1959	V	
Passenger Plane	Crashed on landing approach/ New York City, N.Y.	65			1959	V	
Passenger Plane	Explosion/ Baltimore, Maryland	31			1959	V	
Military Plane	Crashed into barracks Ashiya Air Base, Japan	10			1959	V-I	9 of the 10 dead were from the barracks.
Passenger Plane	Crash after take-off/ Milan, Italy	68			1959	V	
Military Plane	Crash into school & housing/ Okinawa Japan	16	118		1959	V-I	
Private Plane	Crashed in Flight/ Marion, Ohio	10			1959	V	
Passenger Plane	Explosion/ Buffalo, Texas	34		$2.3 million	1959	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crashed in Flight/ Charlottesville, Virginia	26	1		1959	V	
Military Plane	Crashed in Flight/ Taiwan	15			1959	V	
Passenger Plane	Crashed in Flight/ Gulf of Mexico	42			1959	V	
Military Plane	Crashed on take-off into residential area/ Chicago, Ill.	11	13		1959	V-I	8 of 11 killed were civilians on ground.
Passenger Plane	Crashed in Flight/ Pa.	25	1		1959	V	
Passenger Plane	Crashed into mountain/ Montoursville, Pa.	25	1		1959	V	Snowstorm
Military Plane	Crash-Fire/ Castle A.F.B., Calif.			$14.4 million	1959	V	
Passenger Plane	Ground Fire/ Fort Worth, Texas	1		$10 million	1959	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash/ near Jacksonville, Fla.	2		$3 million	1959	V	Aboard aircraft carrier
Military Plane	Ground Fire/ Walker A.F.B., Roswell, New Mexico			$6 million	1959	V	
Military Plane	Ground Fire/ Va. coast	1		$3 million	1959	V	Aboard aircraft carrier
Military Plane	Ground Fire/ Carswell A.F.B., Texas	2		$24 million	1959	V	
Military Plane	Crash-Fire/ Lincoln A.F.B., Nebraska	4		$3.5 million	1959	V	
Passenger Plane	Fire in Flight/ Arlington, Washington	4		$4 million	1959	V	
Military Plane	Explosion in Flight/ Hattiesburg, Mississippi	1		$10 million	1959	V	
Cottage	Fire/ Oklahoma	16			1959	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Apartment	Fire/ Gas Explosion/ Kentucky	11			1959	V	
Dormitory	Fire/ Arkansas	21			1959	V	
House	Fire/ S. Carolina	11			1959	V	
Freight Train-- Butane tank cars.	Derailment & Explosion Meldrim, Ga.	23			1959	V-I	Off bridge carrying LP gas killing picnickers below.
Passenger Train/ Bus	Collision/ N.J.	11			1959	V	
Pentegon	Fire/ Va.		35	$6.7 million	1959	V	
Marine Gas Tanker	Explosion/ Texas	8	41	$6 million	1959	V	Spill upstream was ignited & lead to a tanker which was being loaded.
Bus	Explosion/ Arizona	16	32		1959	V	Collided with tree & exploded.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Truck/ Bus	Collision/ New Jersey	12			1959	V	Tank truck rammed bus from behind.
Truck	Explosion/ Oregon	13	125	$10 million	1959	V-I	Truck holding explosives was parked near build. on fire. It ignited & caused damage, extending circularly 1, 800' from explosion.
Tank Truck	Explosion/ Pa.	11	10		1959	V-I	LPG tank truck caught fire & exploded. Tank flew 700' killing the 11 people.
Coal Mine	Flood in shaft/ Pa.	12			1959	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Disintegrated in Flight, Bolivia, N. Carolina	34			1960	V	
Passenger Plane	Crash/ Holdcroft, Va.	50			1960	V	
Military Plane	Crash/ Adana, Turkey	16			1960	V	
Military & Passenger Plane	Collision/ Rio de Janeiro, Argentina	61	3		1960	V	
Passenger Plane	Explosion in Flight/ Tell City, Indiana	63			1960	V	
Passenger Plane	Crash into mountain/ Anchorage, Alaska	14			1960	V	
Military Blimp	Crash/ N.J. Coast	18			1960	V	
Military Plane	Crash into mountain Quito, Ecuador	18			1960	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Explosion after take-off/ Guam	78	16		1960	V	Carrying military, personnel.
Military Plane	Crash/ Atlantic Ocean	29			1960	V	
Passenger Plane	Crash & Explosion on take-off/ Boston, Mass.	61	11		1960	V	
Passenger Plane	Crash/ Montreal, Canada	12			1960	V	
Passenger Plane	Crash after take-off/ Toledo, Ohio	22	26		1960	V	Fog
Passenger Planes	Collision/ New York City, N.Y.	134			1960	V-I	Planes fell in Brooklyn & Staten Island, 6 killed on ground by fire, 25 cars demolished but only 1 was occupied. A school housing 1,700 child. was untouched one block away.
Military Plane	Crash into streetcar/ Munich, W. Germany	53			1960	V-I	
Helicopter	Crash into cementary/ Illinois	13			1960	V	33 of the deaths were people on the ground.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash on take-off/ Walker Air Force Base, N. Mexico			$21.4 million	1960	V	Crashed into 2 other planes, hanger and 14 parked cars.
Military Plane	Fire/ Carswell Air Force Base, Texas			$3 million	1960	V	
Military Plane	Explosion in Flight/ Little Rock, Arkansas	5		$3.2 million	1960	V-I	Debris fell on residences and school below, starting fires 2 killed on ground.
Passenger Plane	Fire/ Atlanta, Georgia	4		$5 million	1960	V	On runway, during training flight.
Military Plane	Crash on emergency landing/ Larson A.F.B., Washington			$8 million	1960	V	
Military Plane	Crash-fire/ Ramey A.F.B., Puerto Rico	7		$11 million	1960	V	
Military Plane	Crash, Carswell A.F.B., Texas			$3 million	1960	V	
Military Plane	Ground Fire/ Fairchild A.F.B., Washington			$5 million	1960	V	

CHRONOLOGY OF ACCIDENTS
1[illegible]-19[illegible]

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Fire/ Loring A.F.B., Maine	1		$3.5 million	1960	V	
Titan Missile	Ground Fire/ Vandenberg A.F.B., Calif.			$5 million	1960	V	
Passenger Train & Oil Tank Truck	Collision/ Bakersfield, Calif.	14	63		1960	V	
Makeshift Scaffold	Collapse/ Indianapolis Raceway	2	70		1960	I	
Chemical Plant	Explosion Kingsport, Tenn.	10	60		1960	V	
Department Store	Fire/ Wisc.	10	10		1960	V	
Clothing Plant	Fire/ N.J.			$8 million	1960	V	
Electric Generating Plant	Explosion/ N.J.			$3.1 million	1960	V	

CHRONOLOGY OF ACCIDENTS

1955-1975

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Destroyers	Collision/ Calif.	11			1960	V	Fog
Aircraft Carrier	Fire/ N.Y.	50	336	$48 million	1960	V	Fuel tank spilled and caught fire. Under construction 3500 workers were on the carrier.
Coal Mine	Fire/ W. Va.	18			1960	V	
Forest Fire	Calif.			$11 million	1960	V	Destroyed 15,000 acres. Probably caused by smoking.
Forest Fire	Calif.			$11 million	1960	V	Destroyed 20,000 acres. Caused by lightning.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash/ Berg, Belguim	73			1961	V-I	Including one on the ground.
Military Plane	Crash into mountain/ Hong Kong	15	1		1961	V	
Passenger Plane	Fire/ Denver, Colorado	18		$5.2 million	1961	V	Careened off runway into truck
Passenger Plane	Fire-Crash/ Richmond, Virginia	77			1961	V	Carrying 74 Army recruits
Passenger Plane	Crash-Fire/ Jamaica, N. Y.	4		$5 million	1961	V	
Military Plane	Fire in Flight/ Wayne County, N. Carolina	3		$8 million	1961	V	
Military Plane	Fire in Flight/ Denton, N. Carolina	6		$5 million	1961	V	
Passenger Train	Derailment/ Maryland	6	90+		1961	V	Special Train to race track

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Train/ School Bus	Collision	20			1961	V	Grade Crossing
Hotel	Fire/ Calif.	20			1961	V	
Military Radar Station	Sank/ Altantic Ocean	28			1961	V	
Hospital	Fire/ Conn.	16			1961	V	
Home	Fire/ Tennessee	12			1961	V	
Leather Tannery	Fire/ Mass.			$4.5 million	1961	V	
Steel Fabrication Plant	Fire/ Oregon			$3.7 million	1961	V	
Homes	Fire/ Calif.			$24 million	1961	V	Fire spread though-out residential area.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Cargo Ship	Fire / Newfoundland	3		$4 million	1961	V	Destroyed 3 Piers, 2 warehouses, 2 homes.
Truck	Overturned/ Fla.	13			1961	V	
Coal Mine	Explosion/ Indiana	22			1961	V	
Army Training Camp	Explosion/ W. Germany	15	26		1961	V	Howitzer shell exploded.
Passenger Plane	Crash/ Hinsdale, Illinois	78			1961	V	
Passenger Plane	Crash/ Shannon, Ireland	83			1961	V	
Passenger Plane	Crash after take-off/ Chicago, Il.	37			1961	V	
Military Plane	Fire in Flight/ Monticello, Utah	5		$8 million	1961	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash/ Centerville, Iowa	45			1962	V	
Industrial Private Plane	Crash/ Ravenna, Ohio	13			1962	V	
Military Plane	Crash/ Seattle, Washington	44			1962	V	
Passenger Plane	Crash/ Elliot City, Maryland	17			1962	V	
Passenger Plane	Crash/ N.Y.C., N.Y.	25	26		1962	V	
Missiles & Rockets	Fire/ Calif.	9		$7.2 million	1962	V	
Passenger Train	Derailment/ Montana	1	243		1962	V	Off embankment
Passenger Train	Derailment/ Pa.	19			1962	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Office Bldg.	Explosion/ N. Y.	23	94		1962	V	Boiler room explosion
Home	Fire/ Arkansas	10			1962	V	
Chemical Plant	Explosion/ Toledo, Ohio	10	46	$850,000	1962	V	
Hotel	Fire/ Colorado	1	35	$550,000	1962	V	
Clothing Store	Fire/ N. Y.		34	$500,000	1962	V	
Shoe Store	Fire/ Conn.		33	$316,500	1962	V	
Exhibition & Exposition Hall	Fire/ Michigan		1	$4 million	1962	V	
Chemical Plant	Fire/ Marietta, Ohio	1	3	$3 million	1962	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Chemical Plant	Fire/ Brandenburg, Kentucky	1	21	$4 million	1962	V	
Food Milling	Fire/ St. Louis	3	88	$3.3. million	1962	V	
Small Boat	Sank/	18			1962	V	
Tanker & Oil Barges	Collision/ Miss. River	20			1962	V	
Coal Mine	Explosion/ Illinois	11			1962	V	
Coal Mine	Explosion/ Pa.	37			1962	V	
Trailer Truck	Explosion/ N.Y.	10	17		1962	V-I	LPG Explosion. Destroyed 18 bldgs. & 11 autos.

CHRONOLOGY OF ACCIDENTS
1963-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash/ Everglades, Fla.	43			1963	V	Structural Failure
Passenger Plane	Crash/ Pacific Ocean	101			1963	V	
Passenger Plane	Crash/ Elkton, Maryland	82			1963	V	
Military Plane	Ground Fire/ Walker A.F.B., New Mexico			$7 million	1963	V	
Military Plane/ Hanger	Ground Fire/ Selfridge A.F.B., Michigan			$6.4 million	1963	V	
Military/ Commercial	Four Accidents--each plane destroyed by Fire			$5 million each	1963	V	These 4 accidents involved 2 military & 2 commercial planes.
Passenger Train/ Bus	Collision/ Calif.	30			1963	V	
Packing Plant	Explosion/ Indiana	16	52		1963	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Fairgrounds Coliseum	Gas Explosion/ Indiana	68	340		1963	I	
Nursing Home	Fire/ New Jersey	25			1963	V	Fire Journal -- lists this as Hotel.
Nursing Home	Fire/ Ohio	63			1963	V	
Hotel	Fire/ Fla.	21			1963	V	
Atlas Missile & Silo	Fire/ New Mexico			$8.1 million	1963	V	
Factory & Homes	Fire/ New Jersey			$8.1 million	1963	V	23 factory buildings & 3 dwellings were destroyed by wind swipt fire.
Home	Fire/ S. Carolina	12			1963	V	
Home	Fire/ Arkansas	10			1963	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Home	Fire/ Mo.	10			1963	V	
Marine Tanker	Disappeared/	39			1963	V	
U.S. Atomic Submarine	Sank/ N. Atlantic	129			1963	V	
Auto	Plunged into River/	11			1963	V	
Coal Mine	Explosion/ W. Va.	22			1963	V	
Potash Mine	Explosion/ Utah	18			1963	V	

CHRONOLOGY OF ACCIDENTS
1933-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injur/	Property Damage			
Passenger Plane	Crash-Fire/ Gainesville, Fla.	10			1964	V	
Passenger Plane	Crash/ Zephyrcove, Nevada	85			1964	V	Snowstorm
Passenger Plane	Crash/ San Ramon, Calif.	44			1964	V	Pilot was shot by heavily insured passenger.
Military Plane	Crash at base/ Philippines	75			1964	V	1 death on ground at airbase
Passenger Plane	Crash/ Parrotsville, Tenn.	39			1964	V	
Military Plane	Crash into Village/ Thailand	11			1964	I	All 11 deaths on ground. Crew bailed out.
Passenger Plane	Crash/ Las Vegas, Nevada	29			1964	V	Storm
Passenger Plane	Crash on take-off/ Rome, Italy	48			1964	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash into Air Facility/ Calif.	19	14		1964	V-I	3 crew - 16 other
Passenger Plane	Crash/ Arkansas	11			1964	V	
Passenger Plane	Crash/ New Orleans, Louisiana	58			1964	V	
Passenger Train	Derailment/ Indiana		32		1964	V	
Church Parish House	Fire/ Calif.	6	100		1964	V	Fire Journal - 17 deaths
Passenger Train	Wreck/ Illinois	4	49		1964	V	
Nursing Home	Fire/ Indiana	20			1964	V	
Sharecroppers Shack	Fire/ South Carolina	11			1964	V	Defective stove

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
House	Fire/ Minn.	10			1964	V	
Apt. House	Fire/ Chicago	11			1964	V	
Atlas Missile & Silo	Fire/ New Mexico			$11, 5 million	1964	V	
Atlas Missile & Silo	Fire/ New Mexcio			$11. 5 million	1964	V	
Railroad Piers	Fire/ New Jersey			$10 million	1964	V	Started at vacant loading platform & wind spread it along piers and bridges.
Onion Fields	Fire/ N. Y.			$4 million	1964	V	Loss to crops & top soil
Atomic Submarine	Fire/ Miss.			$15.1 million	1964	V	In shipyard. Heat from fire in construction shed transmitted thru hub of sub. caused $15 mil.
Department Store	Fire/ Texas			$7. 2 million	1964	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Floating Drilling Vessel	Fire/ La.	21	24	$2.5 million	1964	V	Struck a shallow gas pocket. Escaping gas ignited.
Church Bus	Collision/ Calif.	8	60		1964	V	Swerved into oncoming traffic.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Tanker Plane	Crash/ Wichita, Kansas	30	23		1965	I-V	7 crew 23 others
Passenger Plane	Plunged into ocean after take-off/ Jones Beach, Long Isl. New York City	84			1965	V	
Passenger Plane	Crash/ Jersey Island	26			1965	V	
Military Plane	Crash/ Atlantic Ocean	16			1965	V	
Passenger Plane	Crash/ Lake Michigan, Ill.	30			1965	V	
Military Transport Plane	Crash after take-off into ocean, Hong Kong	58			1965	V	
Passenger Plane	Crash/ Constance, Kentucky	58			1965	V	Storm
Passenger Plane	Crash on landing/ Salt Lake City, Utah	42	35		1965	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Planes	Collision/ Danbury, Conn.	4	50		1965	V	
Passenger Plane	Fire in Flight/ Mass.	16			1965	V	
Passenger Plane	Fire in Flight/ British Columbia	54			1965	V	
Military Planes	Ground collision/ Forbes A.F.B., Kansas			$5.5 million	1965	V	
Passenger Plane	Ground Fire/ Miami, Fla.			$5.3 million	1965	V	Flamable cleaning fluid ignited.
Passenger Plane	Crash/ Montserrat, British West Indies	30			1965	V	
Private Plane	Crash/ Salt Lake City, Utah	11			1965	V	
Military Plane	Crash into mountain/ Greece	10			1965	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injur/	Property Damage			
Military * Plane	Fire & Explosion on ground/	27			1965	V-I	20 bystanders killed.
Military * Plane	Crash in Flight/	10			1965	V	
Military * Plane	Collision/	84			1965	V	
Military * Plane	Crash into mountain/	14			1965	V	
Millile Silo	Explosion/ Arkansas	53	2		1965	V	All workers--deaths from oxygen depletion & smoke poisoning.
Fairgrounds	Fire/ Tennessee		15	$12 million	1965	V	
Communication Center	Fire/ Japan	12	14		1965	V	
Armory	Gas Explosion/ Iowa	11	50		1965	V-I	Fires spread to local buildings (21 dead--Red Cross)

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Chemical Plant	Explosion/ Louisville, Kentucky	12	8	$10 million	1965	V-I	Evac. of nearby homes, plant, etc. (37 injured--Red Cross)
Tavern	Fire/ Illinois	13			1965	V	Arson
Community Center	Fire/ New York	12			1965	V	Possible Arson
Pipeline	Explosion-Fire/ La.	17	9		1965	I	Failure of transmission lines & ignition of natural gas. Spread to houses, buildings, auto's.
Missle Tracking Station	Fire/ Fla.			$25 million	1965	V	
Sugar Refinery	Fire/ La.	1	30	$5 million	1965	V	
Cruise Ship	Sank/ Nassau	91	10		1965	V	
Auto/Bus	Collision/ New York	5	36		1965	V	Deaths in car; Injuries on bus

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Bus/Truck	Collision/ La.	11	28		1965	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Private Plane	Crash in Flight/ Nogales, Mexico	12			1966	V	
Passenger Plane	Crash in Flight/ Ardmore, Oklahoma	81	17		1966	V	
Military Plane	Crash in Flight/ South China Sea	12			1966	V	
Military Planes	Collision/ Hampton, Virginia	2	44		1966	V-I	One crashed into residential area--all injuries & deaths in this area.
Passenger Plane	Crashed in Flight/ Falls City, Nebraska	42			1966	V	
Military Plane	Crashed in Flight/ Nautucket	19			1966	V	
Military Plane	Crashed in residential area/ Danang, Vietnam	107			1966	V-I	103 of total were civilians on ground.
Military Plane	Explosion in Flight/ Northeastern, New Mexico	1	1	$10 million	1966	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash/ Nwemme, Oregon	18			1966	V	
Passenger Plane	Crash/ Morgan City, La.	11			1966	V	
Private Plane	Crash/ Baja, Mexico	10			1966	V	
Military * Plane	Fire & Explosion/	12			1966	I	All fatalities bystanders
Military * Plane	Crash shortly after take-off/	25			1966	V	
Passenger Train/ Bus	Collision/ Fla.	18			1966	V	
Passenger Train	Derailment/ Mass.		62		1966	V	Vandalized switch.
Train/ Oil Truck	Collision & Explosion/ Everett, Mass.	13	25		1966	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injur/	Property Damage			
Hotel	Fire/ Mass.	12	50		1966	V	
Ammunition Plant	Explosion/ Indiana	3	45		1966	V	
Hotel	Fire/ Alaska	14			1966	V	
Community Center	Fire/ New York	12	19		1966	V	
Hotel	Fire/ Minn.	11	17		1966	V	
Rooming House	Fire/ Fla.	10			1966	V	
Store	Fire/ New York	12			1966	V	All killed were firemen.
Warehouse	Fire/ Calif.		67	$8 million	1966	V	All injured were firemen.

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
T. V. Warehouse	Fire/ New York			$5.2 million	1966	V	
Tavern	Fire/ Mo.	12			1966	V	
Church	Explosion/ Texas	2	103		1966	V	
Freighter/ Fishing Boat	Collision/ Peru	12			1966	V	
Tankers	Collision/ New York Harbor	32	40		1966	V	One British--one Amer. Collision caused release of vapor which exploded.
Aircraft Carrier	Fire/ Vietnam	43			1966	V	
Freighter	Sank/ Lake Huron	22			1966	V	
Tankers	Collision/ New Jersey	2	32		1966	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Autos	Collision/ Arizona	10			1966	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash in flight/ Marseilles, Ohio	38			1967	V	Storm
Passenger and Private Plane	Collision/ Urbana, Ohio	26			1967	V	
Passenger Plane	Crash on landing approach/ Kenner, La.	19	40	$647,000	1967	V-I	Plane struck motel on landing approach; 13 deaths on ground
Helicopters	Collision/ Camp Lejeune, N. C.	22	13		1967	V	
Passenger Plane	Crash in flight Blossburg, Penn.	34	125		1967	V	Storm
Passenger and Private Planes	Collision Hendersonville, N.C.	82			1967	V	Passenger plane taking off, private plane landing
Military Plane	Crash in flight Oak Harbor, Wash.	14			1967	V	
Passenger Plane	Crash on landing Ohio	70	22		1967	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash on landing approach Constance, Ky.	69	13		1967	V	
Excursion Train	Derailment N. Hamp.	8	73		1967	V	
Restaurant	Fire Alabama	25			1967	V	
Chemical Plant	Explosion Hawthorne, N. J.	12	17	$3.5 million	1967	V	Small dust explosion in roaster triggered violent dust explosion
Jail	Fire Florida	38	13		1967	V	Arson, set fire during riot
Aluminum Plant	Explosion Alabama	4	40		1967	V	
Bridge	Collapse W. Va.	46	5		1967	I	
Steel Mill	Molten Metal Texas	4	30		1967	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Ordnance Plant	Explosion Texas	11	2		1967	V	One projectile exploded causing reaction
Exhibition Hall	Fire Chicago			$140 million	1967	V	
Apollo Command Module	Fire Florida	3		$75 million	1967	V	
Carpet Mill	Fire Georgia			$12.3 million	1967	V	Failure of electrical switch gear
Oil Refinery	Explosion Lake Charles, La.	7		$20.5 million	1967	V	Ignition of butane
Post Office	Fire New York			$10 million	1967	V	
Hotel	Fire Wash.	20	14		1967	V	
Apt.	Fire Mo.	12	15		1967	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Hotel	Fire Illinois	10	11		1967	V	
Aircraft Carrier	Fire and Explosion Vietnam	134			1967	V	
Freighter	Sank Kodiak Island	13			1967	V	23 others missing
Coal Mine	Explosion La.	21			1967	V	
Truck	Overturned Calif.	5	60		1967	V	
Autos	Collision Illinois	10			1967	V	
Skydivers	Landed in Lake Erie	16			1967	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crashed in flight/ Battle Mountain, Nevada	15			1968	V	
Military Plane	Crash on takeoff/ Minot, North Dakota	13			1968	V	
Passenger Plane	Crash in flight/ Dawson, Texas	85			1968	V	Electrical storm
Helicopter	Crashed in flight/ Paramount, Calif.	23			1968	V	
Military Plane	Crashed on landing/ Wake Island	11	23		1968	V	Plane landed with one engine out
Passenger Plane	Crash/ Pedro Bay, Alaska	39			1968	V	
Passenger Plane	Crash into hanger on landing/ Chicago, Illinois	27	27		1968	V	Fog
Plane	Crash on takeoff/ Chicago, Illinois			$4.8 million	1968	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Plane	Crash on landing approach Atlantic City, N.J.			$7.5 million	1968	V	
Military Plane	Crash in flight/ Castle Air Force Base, Calif.	9		$3 million	1968	V	
Passenger Plane	Crash on landing/ Charleston, W. Va.	35	2		1968	V	
Passenger Plane	Crash/ Compton, Calif.	21			1968	V	
Passenger Plane	Crash/ Hanover, N. H.	32	8		1968	V	
Passenger Plane	Crash into trees/ Bradford, Pa.	20	12		1968	V	
Passenger Plane	Crash/ Caracas, Venezula	51			1968	V	
Military * Plane	Crash	10			1968	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Planes*	Collision	25			1968	V	Plane and helicopter
Military Plane*	Crash	23			1968	V	
Monorail	Crash/ Texas	1	48		1968	V	
Train/ car	Collision and then derailment/ Ohio	1	55		1968	V	
Train	Derailment/ Indiana		51		1968	V	
Train	Wrecks and explosion/ Crete, Nebraska	8	56		1968	V	
Tenement	Fire/ New York	13			1968	V	Fire started in paper factory on 1st floor and burned upward
House	Fire/ Pa.	11			1968	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Tavern	Fire/ Mo.	12			1968	V	Arson
Sporting Goods Store	Gunpowder explosion/ Indiana	41		$2 million	1968	I	Destroyed 15 buildings
Circus Tent	Collapse New York		110		1968	I	
House	Fire/ New York	11			1968	V	
Commercial Buildings	Explosion/ Indiana	13		$69,000	1968	V	
Warehouse	Fire/ New Jersey			$3.5 million	1968	V	
High School	Fire/ New York			$6 million	1968	V	
Steam Power Plant	Fire/ Fla.			$5 million	1968	V	High pressure line break

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Boat Building	Fire/ Washington			$3.9 million	1968	V	
Shoe Box Plant	Fire/ Mass.			$3.25 million	1968	V	
Mill Building	Fire/ Mass.			$10-15 million	1968	V	
Train	Wreck/ Fla.	1	130		1968	V	
Freighter/ Fishing Boat	Collision Japan	12			1968	V	
Nuclear Submarine	Disappeared at sea	99			1968	V	
Chinese Freighter/ Coast Guard buoy tender	Collision/ La.	17	3		1968	V	
Autos	35 car collision/ New Jersey		23		1968	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Coal Mine	Fire/ W. Va.	78	5		1968	V	
Mine	Explosion/ W. Va.		150		1968	V-I	Subsequent chloride gas escape;1500 evac.
Salt Mine	Fire/ La.	21		$600, 000	1968	V	
Bus/ Auto	Collision/ Calif.	20	11		1968	V	
Barge/ Cargo ship	Collision/ Miss. River	13	44		1968	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash on landing/ Bradford, Pa.	11	14		1969	V	
Passenger Plane	Crash into ocean/ near Los Angeles, Calif.	38			1969	V	
Air taxi Service Plane	Crash-fire after takeoff Port Angeles, Wash.	10			1969	V	
Charter Plane	Crash on landing/ New Orleans, La.	16	6		1969	V	
Military Plane	Crash into street/ Miami, Fla.	10	12		1969	V-I	4 crew 6 on ground
U.S. Relief Plane	Crash into mountain/ Laos	15			1969	V	(Commercial plane)
Passenger/ Private Plane	Collision/ Fairland, Indiana	82			1969	V	
Military Plane	Crash/ Gulf of Tonkin, Vietnam	26			1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash into mountain/ Glen Falls, New York	19			1969	V	
Military Plane	Crash into hangar/ Miramar Naval Air Station	14	11		1969	V	
Passenger Plane	Crash on takeoff/ Stockton, Calif.			$11 million	1969	V	
Passenger Plane	Crash/ San Juan, Puerto Rico	19			1969	V	
Private Plane	Crash/ Albuquerque, N. M.	11			1969	V	
Passenger Plane	Crash/ Lone Pine, Calif.	35			1969	V	
Passenger Plane	Crash/ Monroe, Ga.	14			1969	V	
Passenger Plane	Crash/ Mexico City, Mexico	40	60+		1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military/ Vietnamese Planes	Collision/ Vietnam	77			1969	V	All dead Vietnamese
Military Plane*	Crash into ocean	13			1969	V	
Military Plane*	Undershoot of landing approach	12			1969	V	Pilot error
Military Plane*	Crash in flight	18			1969	V	Missing
Freight Train/Auto	Collision/ Ga.	10			1969	V	
Passenger Train	Derailment/ Maryland	1	150		1969	V	
Freight Train	Explosion/ Mo.	2	100+		1969	V	
Passenger Train/ Passenger Train	Collision/ Conn.	4	34		1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Train/ Passenger Train	Collision/ Ill.		249		1969	V	
Passenger Train/Freight Train	Collision/ Ill.	3	47		1969	V	
Freight Train	Explosion/ Laurel, Miss.	2	76		1969	V-I	Butane tank cars destroyed 30 homes in business district
Office Building	Fire/ New York City	11	5		1969	V	
Tenement	Fire/ Conn.	11	9		1969	V	
Apartment House	Fire/ Kansas City	12			1969	V	
House	Fire/ Arkansas	10			1969	V	
Farm House	Fire/ Mich.	10			1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
House	Fire/ W. Va.	12			1969	V	
Tenement	Fire/ New York	10	12		1969	V	
Timber Construction Building	Explosion/ Mass.			$ 10 million	1969	V	
Hangar	Fire/ New Jersey			$3. 5 million	1969	V	
Nuclear Weapons Plant	Fire/ Colorado .			$45 million	1969	V	
School	Fire/ Ill.			$5. 3 million	1969	V	
Piano Factory	Fire/ Tennessee			$3 million	1969	V	
Paper Plant	Fire/ Louisiana			$3 million	1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Warehouse	Flash Fire/ Mass.			$15 million	1969	V	
Lumber Yard	Fire/ Calif.			$4 million	1969	V	
Mill Construction	Fire/ Rhode Island			$5 million	1969	V	
Carbide Plant	Fire/ Texas			$8 million	1969	V	
Shopping Center	Fire/ Nebraska			$5.5 million	1969	V	
Apartment	Fire/ Calif.	25	35		1969	V	
Freighter/ Oil Barge	Collision/ Miss. River	25	25	$877,000	1969	V	
Destroyer/ Australian Aircraft Carrier	Collision/ S. China Sea	74			1969	V	(report lists 1 dead, 73 missing)

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Aircraft Carrier	Explosions/ Hawaii	27	85		1969	V	17 more missing 15 planes destroyed
Freighter	Sank/ Sardinia	11			1969	V	(Missing)
Trawler/ Tanker	Collision/ N. Carolina	23			1969	V	
Military Rescue Plane	Crash/ Taiwan	11			1969	V	(Missing)
Racing Car	Spun off track/ Ga.	11	50		1969	V	
Bus	Overturned/ Pa.	7	30		1969	V	
Coal Mine	Explosion/ Kentucky	9	31		1969	V	
Cargo Vessel	Material failure/ Pacific Ocean	26	1	$9.3 million	1969	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Printing Press	Explosion/Illinois	4	46			V	
Apartment	Fire/New York	10	4			V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash on takeoff/ Jamaica, New York	11			1970	V	Carrying no passengers
Passenger Plane	Crash into mountain/ Silver Plume, Colorado	31	14		1970	V	
Passenger Plane	Crash/ Huntington, W. Va.	75			1970	V	
Passenger Plane	Crash-Fire/ Anchorage, Alaska	47			1970	V	
Military Plane	Fire/ Loring Air Force Base, Maine			$7.7 million	1970	V	
Prototype Aircraft	Explosion/ Marietta, Ga.	1		$30 million	1970	V	
Military Plane	Crash on takeoff/ Palmdale, Calif.			$20 million	1970	V	
Passenger Plane	Crash after takeoff/ Calif.	13	1		1970	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash on landing/ Anchorage, Alaska	47	94		1970	V	
Military Plane*	Explosion	11			1970	V	
Military Plane*	Crash/	17			1970	V	
Military Plane*	Crash/	13			1970	V	
Military Plane*	Crash/	43			1970	V	
Military Plane*	Crash/	79			1970	V	
Military Plane*	Crash	42			1970	V	
Subway	Collision/ New York	2	71		1970	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Propane Tank Cars	Exploded/ Cresent City, Illinois		70		1970	V-I	Destroyed 15 businesses, 25 houses, 90 homes, 1 school, 1 church
Subway	Collision/ New York		37		1970	V	
Subway	New York	1	50		1970	V	
Freight Train	Derailment/ Illinois			$3 million	1970	V	
Nursing Home	Fire/ Ohio	27			1970	V	
Apartment	Fire/ Chicago	10			1970	V	
Oil Refinery	Fire/ Sugar Creek, Pa.	7	42		1970	V	
Hotel	Fire/ Calif.	19	22		1970	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Hotel	Fire/ Arizona	28	27		1970	V	
Hotel	Fire/ Washington	20			1970	V	
Apartment	Fire/ Minn.	12			1970	V	
Office Building	Fire/ New York	2		$5 million	1970	V	
Grain Elevator	Fire/ La.			$5.4 million	1970	V	
Oil Refinery	Fire/ Beaumont, Texas			$6 million	1970	V	
Department Store	Fire/ Calif.			$4 million	1970	V	
Office Building	Fire/ Oregon			$3.25 million	1970	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Oil Refinery	Explosion-Fire/ Linden, New Jersey			$50 million	1970	V	
Oil Drilling Rig	Fire/ New Orleans, La.			$3.3 million	1970	V	
Stores	Fire/ Pa.			$8 million	1970	V	
Petroleum Product Warehouse	Fire/ Indiana			$4 million	1970	V	
Grocery Warehouse	Explosion-Fire/ Mo.			$4.5 million	1970	V	
Furniture Warehouse	Fire/ Conn.			$8 million	1970	V	
Department Store	Fire/			$3 million	1970	V	
Starch Products	Explosion-Fire/ Iowa			$3.5 million	1970	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Plastics Plant	Fire/ Michigan			$4.5 million	1970	V	
Oil Refinery	Fire/ Pa.	4	15	$3 million	1970	V	
Public School	Fire/ New York			$3 million	1970	V	
Gas Storage Tank	Explosion/ Ga.		41		1970	V	
Apartment	Fire/ New Jersey	14			1970	V	
Passenger Ship	Collision/ Pacific Ocean	27	1	$.25 million	1970	V	
Mobile Drilling Rig	Explosion-Fire/ Gulf Ocean	4	15	$5 million	1970	V-I	
Tank Truck	Explosion--liquid oxygen/ New York	2	40		1970	V-I	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Bus	Over embankment	7	52		1970	V	
Coal Mine	Explosion/ Kentucky	38			1970	V	
Passenger Plane	Crash/	2	51		1970	V	
Passenger Plane	Crash on landing/ New York, N.Y.		76		1970	V	
Ammunition Ship	Explosion/ Red China Sea	26			1970	V	
Ferry	Rammed dock/ New York		51		1970	V	

CHRONOLOGY OF ACCIDENTS
19[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crash into field Coolidge, Arizona	14			1971	V	
Passenger Military	Collision San Gabriel Mountains, Calif.	50	1		1971	V	
Passenger Plane	Crash on landing approach New Haven, Conn.	28	3		1971	V	Into empty beach houses
Passenger Plane	Crash into Pacific Garberville, Calif.	16	4		1971	V	Collided with a factory after takeoff
Army Helicopter Military	Explosion Pegnitz, W. Germ	37			1971	V	
Passenger Plane	Crash into mountain Juneau, Alaska	111			1971	v	
Sightseeing Plane	Crash Colorado City, Arizona	10			1971	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Commuter Plane	Crash on landing approach Peoria, Illinois	16			1971	V	
Cargo Military Plane	Crash on takeoff Little Rock, Arkansas	10			1971	V	
Military Plane	Crash in flight S. China Sea	10			1971	V	
Military* Plane	Crash into ocean	24			1971	V	
Commuter Train	Crash Long Island	1	43		1971	V	
Passenger Train	Derailment La.	11	94		1971	V	
Tank Car	Derailment Brentwood, Texas	1	36		1971	V	Residents evacuated
Chemical Plant (Explosives)	Fire and explosion Woodbine, Ga.	25	33		1971	V-I	Fire journal-60 injured; Fire spread to surrounding bldgs.

CHRONOLOGY OF ACCIDENTS
195[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Apt.	Fire Wash.	12	9		1971	V	
Nursing Home	Fire Pa.	15			1971	V	
Water Supply Tunnel	Gas Explosion Lake Huron	22	9		1971	V	
Nursing Home	Fire Ky.	10	48		1971	V	
Water Supply Tunnel	Gas Explosion Calif.	16			1971	V	under construction
Shoe Warehouse	Fire Ohio			$3 million	1971	V	
Auto Parts Warehouse	Fire Texas			$9 million	1971	V	
Polyethylene Manufacturing	Fire Texas			$4.5 million	1971	V	

CHRONOLOGY OF ACCIDENTS
195[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Rayon Spinning Mill	Fire Alabama			$5 million	1971	V	
Plywood Mill	Fire Va.			$9 million	1971	V	
Polystyrene Foam Manufacturing	Fire Ga.			$5.3 million	1971	V	
Warehouse	Fire Miss.			$3.25 million	1971	V	
Chemical Plant	Explosion New Martinsville, W. Va.			$3 million	1971	V	
School	Fire Mass.			$3 million	1971	V	
Plant	Explosion, Fire Pa.	4	36		1971	V	
Hotel	Explosion, Fire Washington	1	36		1971	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Apt.	Fire Minn.	12	3		1971	V	
Oil Refinery	Fire			$15 million	1971	V	
Tanker	Explosion, Fire Sardinia	16			1971	V	
Ship	Fire Ohio	4	15	$10 million	1971	V	
Construction and Wrecking Vessel	Explosion, Fire Pacific	7	15	$4 million	1971	V-I	Involves injuries to others
Tanker	Fire Atlantic Ocean	31		$10 million	1971	V	
Bus and Auto	Collision Missouri	4	32		1971	V	
Auto	Crash into classroom Texas	32	6		1971	I	Runaway car. All casualties in school

CHRONOLOGY OF ACCIDENTS
195[illegible]-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Truck and Auto	Collision-Explosion Georgia	5	33		1971	V-I	Truck was carrying dynamite
Coal Mine	Explosion California	17			1971	V	
Truck	Chlorine leak, New Orleans, La.		46		1971	I	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Plane	Crashed into home/ Albany, New York	17	37		1972	V-I	16 aboard plane 1 home
Helicopter Air Taxi	Crash/ Dulac, La.	11			1972	V	
Private Plane	Crash into ice cream parlor/ Sacramento, Calif.	22	26		1972	V-I	100 people were in ice cream parlor. Air show
Passenger Plane	Crash on landing into residential area/ Chicago, Illinois	45	20		1972	V-I	43 crew 2 residents
Passenger Plane	Crash on landing approach/ Miami, Fla.	100	82		1972	V	
Passenger Planes	Collision/ Chicago, Ill.	13	138		1972	V-I	One plane on initial takeoff climb
Passenger Planes	Crash in Flight/ Elkton, Kentucky	11			1972	V	
Military* Plane	Crash on landing approach	13			1972	V	

CHRONOLOGY OF ACCIDENTS
1950-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Trains	Collision/ Illinois	44	320		1972	V	
Freight Car Classification Yard	Explosion/ East St. Louis, Illinois		230	$ 7.5 million	1972	V-I	Hump operation of cars -- 868 structures damaged
Train/ Bus	Collision/ New York	5	38		1972	V	
Coal Slag Dam	Burst from rain/ W. Va.	116			1972	I	
Nursing Home	Fire/ Wisconsin	10	3		1972	V	
Nursing Home	Fire/ Illinois	9	32		1972	V	
Hotel	Fire/ Pa.	12			1972	V	
Nursing Home	Fire/ Ohio	10			1972	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Hi-rise housing for elderly	Fire/ Georgia	10			1972	V	
Steel Plant	Gas Explosion/ W. Va.	21		$.6 million	1972	V	
Flour Mill	Explosion/ New York			$3 million	1972	V	
Department Store/Hotel	Explosion Mont.			$4 million	1972	V	
Television Studio	Fire/ Nevada			$3 million	1972	V	
Generating Plant	Explosion/ Calif.			$6.5 million	1972	V	
Oil Refinery	Fire/ Billings, Mont.	1		$5 million	1972	V	
Meat Processing Plant	Fire/ Nebraska			$3.5 million	1972	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
School	Fire/ Hawaii			$3.5 million	1972	V	Arson?
Computer Laboratory	Fire/ New York			$6 million	1972	V	
Livestock Building	Fire/ Ohio			$8 million	1972	V	Arson
Office Building	Fire/ Calif.			$5 million	1972	V	
Building	Explosion/ Ohio	19			1972	V	
Petroleum Storage Depot	Gas Explosion/ Georgia	2	166		1972	V	
Apartment Home	Fire/ New York	1	48		1972	V	
Troop Ship	Explosion Vietnam	21	10		1972	V	

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CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Freighter	Crash into drawbridge/ Georgia	10			1972	I	10 cars and trucks tossed into river-- deaths from these vehicles
Tanker (Marine)	Explosion/ Galveston, Texas	39			1972	V	
Tank Barge Vessel	Fire/ New Jersey		4	$5 million	1972	V	
Marine Tanker	Explosion/ Gulf Ocean	39		$.1 million	1972	V	
Cargo Ship	Collision/ Inland Atlantic	10	8	$10.1 million	1972	V-I	Some of the deaths and injuries on object it hit
Bus	Tumbled down hill/ Pa.	4	43		1972	V	
Bus	Turned over/ Maryland	5	37		1972	V	
Bus/Truck	Collision/ Tenn.	14	15		1972	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Bus	Collision/ La.	12			1972	V	
Bus/ Pickup Truck	Collision/ N. Dakota	4	35		1972	V	
Silver Mine	Explosion-Fire/ Idaho	91			1972	V	
Passenger Train	Derailment/ Nebraska		30		1972	V	
Bus/Tank Truck	Collision/ New Jersey	2	32		1972	V	
Bus/Truck	Collision/ New Mexico	1	45		1972	V	
Bus/Truck	Collision/New Mexico	19	16			V	

CHRONOLOGY OF ACCIDENTS
1955-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Military Plane	Crash into apartment building/ Alameda, Calif.	15	40	$4.9 million	1973	V-I	14 killed were residents of apartment building-pilot also
Army Military Plane	Explosion in flight/ Silver City, N. Carolina	14			1973	V	
Military Planes	Collision/ Sunnyvale, Calif.	16			1973	V	Collision between Navy jet and anti-submarine plane
Passenger Plane	Crash in flight/ Papeete, Tahiti	68			1973	V	New York Times--78 killed
Passenger Plane	Crash on landing approach into residential area/ St. Louis, Mo.	38			1973	V-I	
Passenger Plane	Crash on landing/ Boston, Mass.	88	1		1973	V	Instrument landing in fog
Military Plane	Crash in flight/ Madrid, Spain	24			1973	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Private Plane	Crash in flight/ Mena, Arkansas	11			1973	V	
Train Tank Car	Fire/ Kingman, Arizona	13	95		1973	V-I	Set off explosion in butane plant
Train Ammunition Cars (Bombs)	Explosion/ Roseville, Calif.	-	35	$9 million	1973	V-I	19 block residential area either damaged or destroyed--2 1/2 mile area evacuated
Nursing Home	Fire/ New Jersey	10			1973	V	
Store	Explosion-Fire/ Iowa	12			1973	V	
Gas Storage Tank	Explosion/ New York	40		$13 million	1973	V	LNG gas
Apartment Crane	Collapse/ Va.	14	34		1973	V	Under construction
Bar	Fire/ La.	29	15		1973	V	Arson

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Nursing Home	Fire/ Pa.	11	3		1973	V	
Tenement	Fire/ New Jersey	10	6		1973	V	
Apartment	Fire/ New Jersey	11	2		1973	V	
Apartment	Fire/ Calif.	25	51		1973	V	
Nursing Home	Fire/ Pa.	15			1973	V	
Apartment	Fire/ Mass.	10	23		1973	V	
Freighter	Sank/ New Jersey	29			1973	V	(Norweigan)
Freighter	Sank/ New Jersey	32			1973	V	(Norweigan)

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Fishing Boat	Sank/ Rhode Island	12			1973	V	
Cargo/ Tanker	Collision/ New York	16			1973	V	
Autos	Collision/ Miss.	10			1973	V	
Autos	Collision/ New Jersey	9	40		1973	V	65 vehicles involved
Bulk Oil Storage	Fire/ Bayonne, New Jersey			$4.3 million	1973	V	
Cotton Mill	Fire/ South Carolina			$3 million	1973	V	
Ammonium Nitrate Bulk Storage	Fire-Explosion/ Oklahoma			$3 million	1973	V	
Inorganic Chemical Manufacture	Explosion/ Tonawanda, New York	1	12	$4 million	1973	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Textile Storage	Fire/ Mass.			$3 million	1973	V	
Shipbuilding Yard	Fire/ Calif.			$3.3 million	1973	V	
Ink Manufacture	Fire-Explosion/ Illinois		4	$37 million	1973	V	
Fish Cannery	Fire/ Alaska			$3.5 million	1973	V	
Ink Manufacture	Fire/ Pa.	2	37	$4.5 million	1973	V	
Can Warehouse	Fire/ Calif.			$3.5 million	1973	V	
Pulp and paper mill	Explosion/ Alaska			$3.6 million	1973	V	
Government File Storage	Fire/ Mo.			$14.3 million	1973	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
General Storage Warehouse	Fire/ Conn.			$3.4 million	1973	V	
Ball Bearing Manufacture	Fire/ Conn.			$10 million	1973	V	
Urban Conflagration	Fire/ Mass.		60	$4 million	1973	V	
Passenger Plane	Ground Fire/ Spokane, Washington			$3 million	1973	V	
Cargo Jet	Fire-Crash in flight/ Boston, Mass.	3		$6 million	1973	V	
Building Under Demolition	Fire/ Indiana			$5.3 million	1973	V	
Epoxy Resin Manufacture	Explosion/ Texas		29	$3 million	1973	V	
Passenger Plane	Hard landing/ New York		38		1973	V	

CHRONOLOGY OF ACCIDENTS
1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Passenger Train	Derailment/ Calif.		80		1973	V	Mostly minor
Passenger Train	Derailment/ Illinois		85		1973	V	Slight injuries
Passenger Train	Derailment/ New York		38		1973	V	
Passenger Trains	Collision/ New York	1	140		1973	V	
Private Boat	Sank/ New York	16			1973	V	
Aircraft Carrier	Fire/ Philippines	6	38		1973	V	
Bus/Truck	Collision/ Texas	15			1973	V	

2. Summary of Accidents, 1953-1973

a. Summary of All Accidents, By Type of Operation, 1953-1973

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1953-1973

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	349	8,285	1,673+	$540.9 million	26
Military	197	3,274	489	$415.7 million	19
Commercial	152	5,011	1,184	$125.2 million	9
Railroad	66	516	4,359+	$ 21.5 million	9
Buildings and Structures	265	2,333	4,029	$1.232 billion	17
Marine Vessels	62	1,684	1,117	$138.25 million	4
Mines	20	514	186	$0.85 million	1
Bus, Auto, Truck	38	390	971	$10 million	7
Misc.	10	60	137	$64 million	--
TOTAL	810	13,782	12,472+	$2.0075 billion	66

b. Summary of Accidents, By Type and Year, 1953-1973

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SUMMARY OF AIRLINE ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	27	573	33	$22.25 million	1
Mil.	20	386	33	$18.75 million	1
Com.	7	187	--	$ 3.5 million	-
1954	26	358	17	$42.6 million	1
Mil.	22	272	9	$40.75 million	-
Com.	4	86	8	$1.85 million	1
1955	27	544	100	$25 million	1
Mil.	18	296	9	$22 million	1
Com.	9	248	91	$3 million	-
1956	20	351	47	$32.15 million	1
Mil.	17	281	47	$29.5 million	1
Com.	3	70	--	$2.65 million	-
1957	17	246	146	$47.45 million	1
Mil.	11	154	70	$33.45 million	1
Com.	6	92	76	$14 million	-
1958	22	392	9	$54.25 million	1
Mil.	19	272	--	$53.75 million	1
Com.	3	120	9	$0.5 million	-
1959	23	403	134	$80.2 million	3
Mil.	11	62	131	$63.9 million	3
Com.	12	341	3	$16.3 million	-
1960	26	693	56	$68.1 million	3
Mil.	16	221	3	$63.1 million	2
Com.	10	472	53	$5 million	1
1961	11	399	1	$31.2 million	1
Mil.	4	29	1	$21 million	-
Com.	7	370	-	$10.2 million	1

SUMMARY OF AIRLINE ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1962	5	144	26	--	-
Mil.	1	44	--	--	-
Com.	4	100	26	--	-
1963	6	226	--	$18.4 million	-
Mil.	3	--	--	$18.4 million	-
Com.	3	226	--	--	-
1964	11	429	14	--	2
Mil.	3	105	14	--	2
Com.	8	324	--	--	-
1965	20	604	108	$10.8 million	2
Mil.	9	249	23	$5.5 million	2
Com.	11	355	85	$5.3 million	-
1966	13	352	62	$10 million	3
Mil.	7	178	45	$10 million	3
Com.	6	174	17	--	-
1967	9	374	213	$0.6 million	1
Mil.	2	36	13	--	-
Com.	7	338	200	$0.6 million	1
1968	18	439	72	$15.3 million	-
Mil.	8	129	23	$3 million	-
Com.	10	310	49	$12.3 million	-
1969	21	491	89+	$11 million	1
Mil.	8	181	23	--	1
Com.	13	310	66+	$11 million	-
1970	17	432	151+	$57.7 million	-
Mil.	8	205	--	$27.7 million	-
Com.	9	227	151+	$30 million	-

SUMMARY OF AIRLINE ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1971	11	326	8	--	-
Mil.	4	81	-	--	-
Com.	7	245	8	--	-
1972	8	232	303	--	4
Mil.	2	24	--	--	-
Com.	6	208	303	--	4
1973	11	277	79	$13.9 million	2
Mil.	4	69	40	$4.9 million	1
Com.	7	208	39	$9 million	1
TOTAL	349	8,285	1,673+	$540.9 million	28
Mil.	197	3,274	489	$415.7 million	19
Com.	152	5,011	1,184	$125.2 million	9

SUMMARY OF RAILROAD ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	4	32	263	--	1
1954	4	4	198	--	-
1955	2	15	81	--	-
1956	7	89	446+	--	-
1957	1	12	5	--	-
1958	4	50	290	$2 million	2
1959	2	34	--	--	1
1960	1	14	63	--	-
1961	2	26	90+	--	-
1962	2	20	243	--	-
1963	1	30	--	--	-
1964	1	--	32	--	-
1965	-	--	--	--	-
1966	3	31	87	--	-
1967	1	8	73	--	-
1968	5	11	340	--	-
1969	7	22	656+	--	1

SUMMARY OF RAILROAD ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	5	3	228	$3 million	1
1971	3	13	173	--	-
1972	5	88	618	$7.5 million	1
1973	6	14	473	$9 million	2
TOTAL	66	516	4359+	$21.5 million	9

SUMMARY OF BUILDINGS & STRUCTURES ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	13	139	332	$150.9 million	5
1954	5	40	175	$7.4 million	1
1955	7	48	121	$31 million	1
1956	10	59	379	$36.2 million	-
1957	7	99	60	$18.2 million	-
1958	10	157	218	$14.3 million	-
1959	5	59	35	$6.7 million	-
1960	5	22	140	$11.1 million	1
1961	8	91	26	$32.2 million	-
1962	11	58	355	$23.7 million	-
1963	10	225	392	$16.2 million	1
1964	12	62	149	$59.3 million	-
1965	10	131	128	$52 million	3
1966	11	88	301	$13.2 million	-
1967	15	192	147	$261.3 million	1
1968	13	101	110	$38.7 million	2
1969	21	115	107	$107.3 million	-

SUMMARY OF BUILDINGS & STRUCTURES ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	25	129	161	$118.45 million	-
1971	19	117	184	$60.05 million	1
1972	20	211	249	$48.1 million	1
1973	28	190	276	$125.7 million	-
TOTAL	265	2333	4029	$1.232 billion	17

SUMMARY OF MARINE VESSEL ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	5	82	43	$12.6 million	-
1954	3	169	200	$2 million	-
1955	-	--	--	--	-
1956	3	67	--	$3.2 million	-
1957	3	34	43	$4 million	-
1958	2	51	33	$1.3 million	-
1959	1	8	41	$6 million	-
1960	2	61	336	$48 million	-
1961	1	3	--	$4 million	-
1962	2	38	--	--	-
1963	2	168	--	--	-
1964	1	21	24	$2.5 million	-
1965	1	91	10	--	-
1966	5	111	72	--	-
1967	2	147	--	--	-
1968	4	141	47	--	-
1969	6	186	111	$10.2 million	-

SUMMARY OF MARINE VESSEL ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	4	57	67	$5.25 million	1
1971	4	58	30	$24 million	1
1972	5	80	22	$15.2 million	2
1973	6	111	38	--	-
TOTAL	62	1684	1117	$138.25 million	4

SUMMARY OF MINES ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	--	--	--	--	-
1954	1	16	--	$250,000	-
1955	-	--	--	--	-
1956	-	--	--	--	-
1957	2	48	--	--	-
1958	2	35	--	--	-
1959	1	12	--	--	-
1960	1	18	--	--	-
1961	1	22	--	--	-
1962	2	48	--	--	-
1963	2	40	--	--	-
1964	-	--	--	--	-
1965	-	--	--	--	-
1966	-	--	--	--	-
1967	1	21	--	--	-
1968	3	99	155	$0.6 million	1
1969	1	9	31	--	-

SUMMARY OF MINES ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	1	38	--	--	-
1971	1	17	--	--	-
1972	1	91	--	--	-
1973	-	--	--	--	-
TOTAL	20	514	186	$0.85 million	1

SUMMARY OF BUS, AUTO, TRUCK ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	-	--	--	--	-
1954	-	--	--	--	-
1955	-	--	--	--	-
1956	-	--	--	--	-
1957	3	45	17	--	-
1958	1	27	--	--	-
1959	4	52	167	$10 million	2
1960	-	--	--	--	-
1961	1	13	--	--	-
1962	1	10	17	--	1
1963	1	11	--	--	-
1964	1	8	60	--	-
1965	2	16	64	--	-
1966	1	10	--	--	-
1967	2	15	60	--	-
1968	2	20	34	--	-
1969	2	18	80	--	-

SUMMARY OF BUS, AUTO, TRUCK ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	2	9	92	--	1
1971	4	41	117	--	3
1972	8	61	223	--	-
1973	3	34	40	--	-
TOTAL	38	390	971	$10 million	7

SUMMARY OF MISCELLANEOUS ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1953	1	--	--	$6.9 million	-
1954	-	--	--	--	-
1955	-	--	--	--	-
1956	3	12	--	$10.8 million	-
1957	1	--	--	$24.3 million	-
1958	2	32	137	--	-
1959	-	--	--	--	-
1960	2	--	--	$22 million	-
1961	-	--	--	--	-
1962	-	--	--	--	-
1963	-	--	--	--	-
1964	-	--	--	--	-
1965	-	--	--	--	-
1966	-	--	--	--	-
1967	1	16	--	--	-
1968	-	--	--	--	-
1969	-	--	--	--	-

SUMMARY OF MISCELLANEOUS ACCIDENTS, BY YEAR

Year	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
1970	-	--	--	--	-
1971	-	--	--	--	-
1972	-	--	--	--	-
1973	-	--	--	--	-
TOTAL	10	60	137	$64 million	-

c. Summary of Accidents, By Type of Operation, 1953-1973

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1953

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	27	573	38	$22.25 million	1
Military	20	386	38	$18.75 million	1
Commercial	7	187	--	$3.5 million	-
Railroad	4	32	263	--	1
Buildings and Structures	13	139	332	$150.9 million	5
Marine Vessels	5	82	43	$12.6 million	-
Mines	-	--	--	--	-
Bus, Auto, Truck	-	--	--	--	-
Misc., Forest Fire	1	--	--	$6.9 million	-
TOTAL	50	826	676	$192.65 million	7

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1954

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	26	358	17	$42.6 million	1
Military	22	272	2	$40.75 million	-
Commercial	4	86	3	$1.85 million	1
Railroad	4	4	193	--	-
Buildings and Structures	5	40	175	$7.4 million	1
Marine Vessels	3	169	200	$2 million	-
Mines	1	16	--	$250,000	-
Bus, Auto, Truck	-	--	--	--	-
Misc. ________ ________	-	--	--	--	-
TOTAL	39	587	590	$52.25 million	2

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1955

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	27	544	100	$25 million	1
Military	18	296	9	$22 million	1
Commercial	9	248	91	$3 million	-
Railroad	2	15	81	--	-
Buildings and Structures	7	48	121	$31 million	1
Marine Vessels	-	--	--	--	-
Mines	-	--	--	--	-
Bus, Auto, Truck	-	--	--	--	-
Misc. ______ ______	-	--	--	--	-
TOTAL	36	607	302	$56 million	2

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1956

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	20	351	47	$32.15 million	1
Military	17	281	47	$29.5 million	1
Commercial	3	70	--	$2.65 million	-
Railroad	7	89	446+	--	-
Buildings and Structures	10	59	379	$36.2 million	-
Marine Vessels	3	67	--	$3.2 million	-
Mines	-	--	--	--	-
Bus, Auto, Truck	-	--	--	--	-
Misc., Forest Fires	3	12	--	$10.8 million	-
TOTAL	43	578	872+	$82.35 million	1

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1957

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	17	246	146	$47.45 million	1
Military	11	154	70	$33.45 million	1
Commercial	6	92	76	$14 million	-
Railroad	1	12	5	--	-
Buildings and Structures	7	99	60	$18.2 million	-
Marine Vessels	3	34	43	$4 million	-
Mines	2	48	--	--	-
Bus, Auto, Truck	3	45	17	--	-
Misc. Forest Fires	1	--	--	$24.3 million	-
TOTAL	34	484	271	$93.95 million	1

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1958

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	22	392	9	$54.25 million	1
Military	19	272	--	$53.75 million	1
Commercial	3	120	9	$0.5 million	-
Railroad	4	50	290	$2 million	2
Buildings and Structures	10	157	218	$14.3 million	-
Marine Vessels	2	51	33	$1.3 million	-
Mines	2	35	--	--	-
Bus, Auto, Truck	1	27	--	--	-
Misc.					
Poisoning	1	27	--	--	-
Paratroopers	1	5	137	--	-
TOTAL	43	744	687	$71.85 million	3

SUMMARY OF ACCIDENTS. BY TYPE OF OPERATION, 1959

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	23	403	134	$80.2 million	3
Military	11	62	131	$63.9 million	3
Commercial	12	341	3	$16.3 million	-
Railroad	2	34	--	--	1
Buildings and Structures	5	59	35	$6.7 million	-
Marine Vessels	1	8	41	$6 million	-
Mines	1	12	--	--	-
Bus, Auto, Truck	4	52	167	$10 million	2
Misc.	-	--	--	--	-
TOTAL	36	568	377	$102.9 million	6

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1960

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	26	693	56	$68.1 million	3
Military	16	221	3	$63.1 million	2
Commercial	10	472	53	$5 million	1
Railroad	1	14	63	--	-
Buildings and Structures	5	22	140	$11.1 million	1
Marine Vessels	2	61	336	$48 million	-
Mines	1	18	--	--	-
Bus, Auto, Truck	-	--	--	--	-
Misc. Forest Fires	2	--	--	$22 million	-
TOTAL	37	808	595	$149.2 million	4

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1961

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	11	399	1	$31.2 million	1
Military	4	29	1	$21 million	-
Commercial	7	370	--	$10.2 million	1
Railroad	2	26	90	--	-
Buildings and Structures	8	91	26	$32.2 million	-
Marine Vessels	1	3	--	$4 million	-
Mines	1	22	--	--	-
Bus, Auto, Truck	1	13	--	--	-
Misc. __________ __________	-	--	--	--	-
TOTAL	24	554	117	$67.4 million	1

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1962

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	5	144	26	--	-
Military	1	44	--	--	-
Commercial	4	100	26	--	-
Railroad	2	20	243	--	-
Buildings and Structures	11	58	355	$23.7 million	-
Marine Vessels	2	38	--	--	-
Mines	2	48	--	--	-
Bus, Auto, Truck	1	10	17	--	1
Misc. __________ __________	-	--	--	--	-
TOTAL	23	318	641	$23.7 million	1

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SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1963

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	6	226	--	$18.4 million	-
Military	3	--	--	$18.4 million	-
Commercial	3	226	--	--	-
Railroad	1	30	--	--	-
Buildings and Structures	10	225	392	$16.2 million	1
Marine Vessels	2	168	--	--	-
Mines	2	40	--	--	-
Bus, Auto, Truck	1	11	--	--	-
Misc.	-	--	--	--	-
TOTAL	22	700	392	$34.6 million	1

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1964

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	11	429	14	--	2
Military	3	105	14	--	2
Commercial	8	324	--	--	-
Railroad	1	--	32	--	-
Buildings and Structures	12	62	149	$59.3 million	-
Marine Vessels	1	21	24	$2.5 million	-
Mines	-	--	--	--	-
Bus, Auto, Truck	1	8	60	--	-
Misc. __________ __________	-	--	--	--	-
TOTAL	26	520	279	$61.8 million	2

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1965

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	20	604	108	$10.8 million	2
Military	9	249	23	$5.5 million	2
Commercial	11	355	85	$5.3 million	-
Railroad	-	--	--	--	-
Buildings and Structures	10	131	128	$52 million	3
Marine Vessels	1	91	10	--	-
Mines	-	--	--	--	-
Bus, Auto, Truck	2	16	64	--	-
Misc.	-	--	--	--	-
TOTAL	33	842	310	$62.8 million	5

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SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1966

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	13	352	62	$10 million	3
Military	7	178	45	$10 million	3
Commercial	6	174	17	--	-
Railroad	3	31	87	--	-
Buildings and Structures	11	88	301	$13.2 million	-
Marine Vessels	5	111	72	--	-
Mines	-	--	--	--	-
Bus, Auto, Truck	1	10	--	--	-
Misc. ______ ______	-	--	--	--	-
TOTAL	33	592	522	$23.2 million	3

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1967

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	9	374	213	$0.6 million	1
Military	2	36	13	--	-
Commercial	7	338	200	$0.6 million	1
Railroad	1	8	73	--	-
Buildings and Structures	15	192	147	$261.3 million	1
Marine Vessels	2	147	--	--	-
Mines	1	21	--	--	-
Bus, Auto, Truck	2	15	60	--	-
Misc. Skydivers	1	16	--	--	-
TOTAL	31	773	493	$261.9 million	2

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1968

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	18	439	72	$15.3 million	-
Military	8	129	23	$3 million	-
Commercial	10	310	49	$12.3 million	-
Railroad	5	11	340	--	-
Buildings and Structures	13	101	110	$38.7 million	2
Marine Vessels	4	141	47	--	-
Mines	3	99	155	$0.6 million	1
Bus, Auto, Truck	2	20	34	--	-
Misc. ______ ______	-	--	--	--	-
TOTAL	45	811	758	$54.6 million	3

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1969

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	21	491	89+	$11 million	1
Military	8	181	23	--	1
Commercial	13	310	66+	$11 million	-
Railroad	7	22	656+	--	1
Buildings and Structures	21	115	107	$107.3 million	-
Marine Vessels	6	186	111	$10.2 million	-
Mines	1	9	31	--	-
Bus, Auto, Truck	2	18	80	--	-
Misc.	-	--	--	--	-
TOTAL	58	841	1074+	$128.5 million	2

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1970

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	17	432	151	$57.7 million	-
Military	8	205	--	$27.7 million	-
Commercial	9	227	151	$30 million	-
Railroad	5	3	228	$3 million	1
Buildings and Structures	25	129	161	$118.45 million	-
Marine Vessels	4	57	67	$5.25 million	1
Mines	1	38	--	--	-
Bus, Auto, Truck	2	9	92	--	1
Misc.	-	--	--	--	-
TOTAL	54	668	699	$184.4 million	3

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1971

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	11	326	8	--	-
Military	4	81	--	--	-
Commercial	7	245	8	--	-
Railroad	3	13	173	--	-
Buildings and Structures	19	117	184	$60.05 million	1
Marine Vessels	4	58	30	$24 million	1
Mines	1	17	--	--	-
Bus, Auto, Truck	4	41	117	--	3
Misc.	-	--	--	--	-
TOTAL	42	572	512	$84.05 million	5

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1972

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	8	232	303	--	4
Military	2	24	--	--	-
Commercial	6	208	303	--	4
Railroad	5	88	618	$7.5 million	1
Buildings and Structures	20	211	249	$48.1 million	1
Marine Vessels	5	80	22	$15.2 million	2
Mines	1	91	--	--	-
Bus, Auto, Truck	8	61	223	--	-
Misc.	-	--	--	--	-
TOTAL	47	763	1415	$70.8 million	8

SUMMARY OF ACCIDENTS, BY TYPE OF OPERATION, 1973

Type of Operation	Number of Incidents	Consequences			Number of Incidents Involving Involuntary Risk
		Death	Injury	Reported Property Damage	
Airlines	11	277	79	$13.9 million	2
Military	4	69	40	$4.9 million	1
Commercial	7	208	39	$9 million	1
Railroad	6	14	473	$9 million	2
Buildings and Structures	28	190	276	$125.7 million	-
Marine Vessels	6	111	38	--	-
Mines	-	--	--	--	-
Bus, Auto, Truck	3	34	40	--	-
Misc.	-	--	--	--	-
TOTAL	54	626	906	$148.6 million	4

d. Frequency of Accidents, 1953-1973

FREQUENCY OF ACCIDENTS, BY NUMBER OF FATALITIES, 1953-1963

Number Fatalities	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
10-15	12	51	6	7	7	14	2	8	4	111
16-20	7	15	3	4	1	5	1	2	3	41
21-25	7	7	2	1		5	1		3	26
26-30	5	2	2	2				1		12
31-40	6	2		5	1	1			2	17
41-50	9	6	1	1						17
51-60		2								2
61-70	6	3				1	1			11
71-30	4					1				5
81-90	1									1
91-100						1				1
101-120	1			1						2
121-140	1	1		1						3
Total	59	89	14	22	9	28	5	11	12	249

FREQUENCY OF ACCIDENTS, BY NUMBER OF FATALITIES, 1964-1973

Number Fatalities	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
10-15	18	24	4	8	4	42	2	9		111
16-20	10	6	1	4		3	3	1	1	29
21-25	2	8		5	2	2	1		2	22
26-30	7	3		4		3				17
31-40	11	1		5			2	1	1	21
41-50	9	2	1	1	1		1			15
51-60	4	1					1			6
61-70	3									3
71-80	1	3		1					1	6
81-90	7	1								8
91-100	1			2					1	4
101-120	1	1					1			3
121-140				1						1
Total	74	50	6	31	7	50	11	11	6	246

FREQUENCY OF ACCIDENTS, BY NUMBER OF FATALITIES, 1953-1973

Number Fatalities	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
10-15	30	75	10	15	11	56	4	17	4	222
16-20	17	21	4	8	1	8	4	3	4	70
21-25	9	15	2	6	2	7	2		5	48
26-30	12	5	2	6		3		1		29
31-40	17	3		10	1	1	2	1	3	38
41-50	18	8	2	2	1		1			32
51-60	4	3					1			8
61-70	9	3				1	1			14
71-80	5	3		1		1			1	11
81-90	8	1								9
91-100	1			2		1			1	5
101-120	2	1		1			1			5
121-140	1	1		2						4
Total	133	139	20	53	16	78	16	22	18	495

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY NUMBER OF INJURIES, 1953-1963

Number Injuries	Pass. Airline	Military Airline	Railroad	Marine	Indus-trial Bldgs.	Homes, Hotels, Stores	Other Struc-tures	Bus, Truck	Mines	Total
30-40			5	1	5	3	2			16
41-50			4	1			1			6
51-60			1			1	1			3
61-70							2			2
71-80			1							1
81-90					2		1			3
91-100			2		1					3
101-125			1							1
126-150			1							1
151-200			1							1
201-500			1							1
Total			17	2	8	4	7			38

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY NUMBER OF INJURIES, 1964-1973

Number Injuries	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
30-40	1		8	2	4	2		9	1	27
41-50	1	1	5		4	1	1	3		15
51-60	1		3	1				3		8
61-70			1		1					2
71-80	1		5							6
81-90			1							1
91-100						1				1
101-125			1			1	1			3
126-150			3							3
151-200					1				1	2
201-250			2							2
Total	4	1	29	3	10	5	2	15	2	70

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY NUMBER OF INJURIES, 1953-1973

Number Injuries	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
30-40	1		13	3	9	5	2	9	1	43
41-50	1	1	9	1	4	1	2	3		21
51-60	1		4	1		1	1	3		11
61-70			1		1		2			4
71-80	1		6							7
81-90			1		2		1			4
91-100			2		1	1				4
101-125			2			1	1			4
126-150			4							4
151-200			1		1				1	3
201-250			3							3
Total	4	1	46	5	18	9	9	15	2	108

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY PROPERTY DAMAGE, 1953-1963

Million $	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
3-5	7	27		1	16		7			58
5-7		9		1	1	1	3			15
7-9	1	9			3	1	1			15
9-11	1	4					3			8
11-15		1		1						2
15-20					1		1			2
20-30		2				1	1			4
30-40										
40-50										
50-75				2						2
75-100										
100-150										
Total	9	52		3	23	3	16			106

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY PROPERTY DAMAGE, 1964-1973

Million $	Pass. Airline	Military Airline	Railroad	Marine	Industrial Bldgs.	Homes, Hotels, Stores	Other Structures	Bus, Truck	Mines	Total
3-5	2	1	1	2	31	11	5			53
5-7	2	1			7	3	1			14
7-9	1	1	2		6	2				12
9-11	1	1		2	2	1	1			8
11-15					4		4			8
15-20				1						1
20-30		1			1		1			3
30-40		1			1					2
40-50					2					2
50-75							1			1
75-100										
100-150							1			1
Total	6	6	3	5	54	17	14			105

FREQUENCY OF ACCIDENTS WITH LESS THAN 10 DEATHS, BY PROPERTY DAMAGE, 1953-1973

Million $	Pass. Airline	Military Airline	Railroad	Marine	Indus-trial Bldgs.	Homes, Hotels, Stores	Other Struc-tures	Bus, Truck	Mines	Total
3-5	9	28	1	3	47	11	12			111
5-7	2	10		1	8	4	4			29
7-9	2	10	2		9	3	1			27
9-11	2	5		2	2	1	4			16
11-15		1		1	4		4			10
15-20				1	1		1			3
20-30		3			1	1	2			7
30-40		1			1					2
40-50					2					2
50-75					2		1			3
75-100										
100-150							1			1
Total	15	58	3	8	77	20	30			211

B. Accidents Involving Hazardous Materials

1. Accidents Involving Hazardous Materials, 1953-1973

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Fireworks Warehouse	Explosion (Texas)	4	95	$3 million	1953	I	4 deaths in apartment house
Chemical Plant	Explosion (Tonawanda, New York)	10	27	$0.5 million	1953	I	12 buildings demolished
Tankers (Collision)	Explosion (Delaware)	4	0	$12 million	1953	V	--
Fireworks Plant	Explosion (Maryland)	10	50	$0.3 million	1954	V	--
Oil Refinery	Fire (Whiting, Indiana)	2	40	$16 million	1955	I	--
Petroleum Tanks	Explosion (Texas)	19	32	--	1956	V	--
Chemical Plant	Explosion (Marcus Hook, Pennsylvania)	0	8	$3 million	1956	V	--
Tanker	Explosion (La.)	25	0	$3.2 million	1956	V	Being loaded
Chemical Plant	Explosion (Nitro, W. Va.)	8	0	$5 million	1957	V	--
Propane Storage Tank	Explosion (Whiting, Ind.)	0	0	$3 million	1957	V	--
Tanker	Explosion (California)	10	43	$0.5 million	1957	V	In shipyard

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Tanker/ Freighter	Collision (Delaware River)	10	0	$3.5 million	1957	V	
Railroad Tank Car	Explosion (Niagra Falls, New York)	0	200	$1 million	1958	I	Buildings within 1/2 mile radius damage
Railroad Tank Car	Explosion (Mt. Pulaski, Ill.)	2	40	$1 million	1958	I	
Oil Refinery	Fire (Signal Hill, Calif.)	2	0	$9 million	1958	V	
Tankers	Collision (Rhode Island)	18	33	$1.3 million	1958	V	
Freight Train (Butane)	Derailment (Meldrim, Ga.)	23	0	--	1959	I	Deaths were picnickers below
Tanker	Explosion (Texas)	8	41	$6 million	1959	V	Being loaded
Tank Truck/ Bus	Collision (New Jersey)	12	0	--	1959	V	--
Truck (Explosives)	Explosion (Oregon)	13	125	$10 million	1959	I	--
Tank Truck (LPG)	Explosion (Pennsylvania)	11	10	--	1959	I	Deaths were bystanders
Passenger Train and Oil Tank Truck	Collision (Bakersfield, California)	14	63	--	1960	V	--

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Chemical Plant	Explosion (Kingsport, Tennessee)	10	60	--	1960	V	--
Chemical Plant	Explosion (Toledo, Ohio)	10	46	$0. 85 million	1962	V	--
Chemical Plant	Fire (Marietta, Ohio)	1	3	$3 million	1962	V	--
Chemical Plant	Explosion (Brandenburg, Kentucky)	1	21	$4 million	1962	V	--
Tanker/Oil Barges	Collision (Mississippi River)	20	0	--	1962	V	--
Trailer Truck	Explosion (New York)	10	17	--	1962	I	LPG-Destroyed 18 buildings, 11 autos
Chemical Plant	Explosion (Louisville, Ky.)	12	8	$10 million	1965	V	Evacuation of nearby homes
Pipeline	Explosion/Fire (Louisiana)	17	9	--	1965	V	Spread to homes, buildings
Train/Oil Truck	Collision (Everett, Mass.)	13	25	--	1966	V	--
Tankers	Collision (N. Y. harbor)	32	40	--	1966	V	--

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Tankers	Collision (New Jersey)	2	32	--	1966	V	--
Chemical Plant	Explosion (Hawthorne, New Jersey)	12	17	$3.5 million	1967	V	--
Oil Refinery	Fire (Lake Charles, La.)	7	0	$20.5 million	1967	V	--
Barge/Cargo Ship	Collision (Mississippi River)	21	44	--	1968	V	--
Freight Train (Butane)	Explosion (Laurel, Miss.)	2	76	--	1969	I	Destroyed 30 homes
Carbide Plant	Fire (Texas)	0	0	$8 million	1969	V	--
Freighter/ Oil Barge	Collision (Mississippi River)	25	25	$4 million	1969	V	--
Propane Tank Cars	Explosion (Crescent City, Illinois)	0	70	--	1970	I	Destroyed 15 businesses, 90 houses 1 school, 1 church
Oil Refinery	Fire (Sugar Creek, Pa.)	7	42	--	1970	V	--
Oil Refinery	Fire (Beaumont, Texas)	0	0	$6 million	1970	V	--

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Oil Refinery	Explosion/Fire (Linden, N. J.)	0	0	$50 million	1970	V	--
Oil Drilling Rig	Fire (New Orleans, La.)	0	0	$3.3 million	1970	V	--
Petroleum Products Warehouse	Fire (Indiana)	0	0	$4 million	1970	V	--
Oil Refinery	Fire (Pa.)	4	15	$3 million	1970	V	--
Tank Truck	Explosion (N. Y.)	2	40	--	1970	I	--
Mobile Drilling Rig	Fire (Gulf Ocean)	4	15	$5 million	1970	I	--
Tank Car	Derailment (Brentwood, Texas)	1	36	--	1971	V	Residents evacuated
Chemical Plant	Fire/Explosion (Woodbine, Ga.)	25	33	--	1971	I	Fire spread to surrounding bldgs.
Chemical Plant	Explosion (New Martinsville, W. Va.)	0	0	$3 million	1971	V	--
Oil Refinery	Fire	0	0	$15 million	1971	V	--
Tanker	Fire (Atlantic Ocean)	31	0	$10 million	1971	V	--

Accidents Involving Hazardous Materials, 1953-1973

Type of Operation	Type of Accident/ Location	Consequences			Date	Risk Factor	Comments
		Death	Injury	Property Damage			
Truck/Auto (Collision)	Explosion (Georgia)	5	33	--	1971	I	Truck carrying dynamite
Oil Refinery	Fire (Billings, Montana)	1	0	$5 million	1972	V	--
Petroleum Storage Depot	Explosion (Georgia)	2	166	--	1972	V	--
Tanker	Explosion (Galveston, Texas)	39	0	--	1972	V	--
Tank Barge	Fire (N. J.)	0	4	$5 million	1972	V	--
Railroad Tank Car	Fire (Kingman, (Arizona)	13	95	--	1973	I	--
Railroad (Bombs)	Explosion (Roseville, Cal.)	0	35	$9 million	1973	I	Damaged 19 blocks of residences
Gas Storage Tank	Explosion (New York)	40	0	$13 million	1973	V	--
Cargo/Tanker	Collision (N. Y.)	16	0	--	1973	V	--
Bulk Oil Storage	Fire (Bayonne, New Jersey)	0	0	$4. 3 million	1973	V	--
Inorganic Chemical Manufacturer	Explosion (Tonawanda, New York)	1	12	$4 million	1973	V	--

2. Railroad Hazardous Material Accidents Involving Large Evacuations (over 100 people) 1965-1973

Railroad Hazardous Material Accidents Involving Large Evacuations (Over 100 People), 1965-1973

Date	Location	Commodity	Immediate Cause	Type Car	Fire	Explosions	Contaminations	Release	Deaths	Injuries	Number Evacuated
2/23/65	Toinette, Alabama	Sulfuric acid Acetaldehyde Hydrocyanic acid	Derailment	Tank							3 mile area
9/26/65	Westfir, Oregon	105 millimeter shells	Sparks	Box	Y	Y					300
12/4/65	Camden, Arkansas	Chemicals Anti-knock	Derailment	Tank		Y					1000+
8/28/66	Verona, Kentucky	Propane	Derailment	Tank		Y				8	Unknown
3/5/67	Litchfield, Illinois	Naptha Ethylene oxide Butyl alcohol	Derailment	Tank		Y				Several	4-block area
5/28/67	Switzer, South Carolina	TNT Acetaldehyde	Derailment	Box, Tank							2-mile area
8/22/67	Texarkana, Texas	Vinylidene Chloride	Derailment	Tank		Y				8 firemen	5700
10/28/67	Danbury, Texas	Naptha, Chlorine Methanol	Derailment	Tank							1200
11/18/67	Waterford, Alabama	Chlorine	Derailment	Tank				Y			2800
1/1/68	Dunreith, Indiana	Ethylene oxide	Derailment	Tank	Y	Y					236
1/13/68	Chadbourne, North Carolina	Ammunition (Bombs, shells)	Derailment	Box	N	N					1500

Railroad Hazardous Material Accidents Involving Large Evacuations (Over 100 People), 1965-1973

Date	Location	Commodity	Immediate Cause	Type Car	Fire	Explosions	Contaminations	Release	Deaths	Injuries	Number Evacuated
2/27/68	Hagerstown, Maryland	Propane	Too close at crossing	Truck				Y			2500
4/21/68	Kelley, Louisiana	Fuel oil Anhydous ammonia	Derailment	Tank	Y			Y		2	240
5/7/68	Lilesville, North Carolina	Ammunition	Derailment	Box							1/2 mile area school
8/13/68	Urbana, Ohio	Class "A" explosives (Shells)	Derailment	Box							4000
11/5/68	Provo, Utah	Automobiles, LPG, Class "A" explosives	Derailment	Tank	Y						1 mile area
1/15/69	Springville, Alabama	LPG	Derailment	Tank	Y	Y		Y		1	500
1/23/69	Grantham, Pennsylvania	Class "A" explosives	Derailment	Box		N					200
1/25/69	Laurel, Mississippi	LPG	Derailment	Tank		Y			2	38	1000
2/18/69	Crete, Nebraska	Anhydrous ammonia	Derailment	Tank				Y	9	40	400
3/17/69	Powder Springs, Georgia	LPG	Derailment	Tank				Y			1 school Several residences
3/29/69	Wetunka, Okla.	Hydroflouric acid	Derailment	Tank							1800
4/16/69	Lobdell, La.	Butadiene	Derailment	Tank							150

Railroad Hazardous Material Accidents Involving Large Evacuations (Over 100 People), 1965-1973

Date	Location	Commodity	Immediate Cause	Type Car	Fire	Explosions	Contaminations	Release	Deaths	Injuries	Number Evacuated
12/24/69	Piedmont, W. Va.	Explosives "Class A"	Derailment	Box	N	N	N	N			150
9/3/69	Wellington, Alabama	Propane	Derailment	Tank	Y	N	N	N			200
9/10/69	Butler, Ind.	Ammonia	Derailment	Tank	N	N	N				700
10/18/69	Troop, Texas	Ethylene Oxide	Derailment	Tank	Y	Y	N	Y			100
5/16/69	Logansport, La.	Ammonium Nitrate	Derailment	Tank	N	N	Y	Y			1800
11/30/69	Crew Lake, La.	Chlorine	Derailment	Tank	N	N	N	N			250
11/26/69	Rockwall, Tex.	Anhydrous Ammonia	Derailment	Tank	N	N	N	N			200
3/3/70	Danbury, Tex.	Naptha	Derailment	Tank	Y	Y			1	1	300
4/9/70	New Athens, Ill.	Vinyl Chloride	Derailment	Tank	Y						1500
5/24/70	Jasper, Ala.	Cyanide of Sodium	Derailment	Tank	N	N		Y			500
6/21/70	Crescent City, Illinois	Propane	Derailment	Tank	Y	Y	N	Y		64	600-800
10/25/70	Farmers, Ky.	LPG	Derailment	Tank	N	N					1000 (300?)
2/16/71	Ashkun, Ill.	Alcohol	Derailment	Tank	Y	N	N	Y			2500
3/27/71	Panther Burn, Alabama	Vinyl Chloride	Derailment	Tank	Y	N	N	N			250
5/2/71	Eden, Miss.	Vinyl Chloride	Derailment	Tank	Y	Y	N	N			200

Railroad Hazardous Material Accidents Involving Large Evacuations (Over 100 People), 1965-1973

Date	Location	Commodity	Immediate Cause	Type Car	Fire	Explosions	Contaminations	Release	Deaths	Injuries	Number Evacuated
9/18/71	Western, Ill.	Naptha	Derailment	Tank	Y	N	N	Y			150
11/12/71	Indianapolis, Indiana	Sulphur Monochloride	Derailment	Tank	N	N	N	Y		3	3 mi. rad.
12/3/71	Wheatfield, Ind.	Wet Nitro Cellulose	Derailment	Tank	Y	N	N	N			700
12/3/71	Thomasville, Alabama	Chlorine	Derailment	Tank	N	N	N	N			112
12/11/71	Corbin, La.	Anti-Knock Compound	Derailment	Tank	N	N	N	N			800
5/14/72	Iseleta, Ohio	Phosphorus Pentesulfide	Derailment	Box	Y	N	N	N			1100
6/1/72	Dallas, Texas	Liquid Ethylene	Derailment	Tank	Y	Y	N	Y		7	100
2/5/73	Downington, Pa.	Nitrating Acid	Derailment	Tank	N	N	Y	Y			1500
4/2/73	Lovick, Ala.	Anydrous Ammonia	Derailment	Tank	N	N	N	N			100 families
4/28/73	Roseville, Calif.	Explosive Bombs	Derailment	Tank	Y	Y	Y	Y		35	2000
5/3/73	Herty, Texas	Vinyl Chloride	Derailment	Tank	N	N	N	Y			900
5/23/73	Mentor, Ohio	Chlorosulfanic Acid	Derailment	Tank	N	N	N	Y			500
7/20/73	Ft. Wayne, Ind.	Vinyl Chloride	Derailment	Tank	Y	Y	N	Y			4500
7/13/73	Mansfield, Ohio	Propylene Oxide	Derailment	Tank	N	N	N	N			200
10/10/73	Marked Tree, Arkansas	LPG	Derailment	Tank	Y	N	Y	Y			2500

3. Hazardous Materials Summaries

a. Summary of Hazardous Material Accidents, 1953-1973

Summary of Hazardous Material Accidents, 1953-1973

Type of Accident	Date	Number of Incidents	Deaths	Injuries	Property Damage
Chemical Plants	1953-1963	6	40	165	$ 15.5 million
	1964-1973	6	50	70	$ 28.5 million
Total	1953-197	12	90	235	$ 44.0 million
Oil Refineries, Storage	1953-1963	3	23	72	$ 25.0 million
	1964-1973	10	21	223	$107.0 million
Total	1953-1973	13	44	295	$132.0 million
Gas Storage Tanks	1953-1963	1	0	0	$ 3.0 million
	1964-1973	1	40	0	$ 13.0 million
Total	1953-1973	2	40	0	$ 16.0 million
Oil Drilling Rigs	1953-1963	0	0	0	$ 0.0
	1964-1973	2	4	15	$ 8.8 million
Total	1953-1973	2	4	15	$ 8.8 million
Pipelines	1953-1963	0	0	0	$ 0.0
	1964-1973	1	17	9	$ 0.0
Total	1953-1973	1	17	9	$ 0.0
Fireworks Plant	1953-1963	2	14	145	$ 3.3 million
	1964-1973	0	0	0	$ 0.0
Total	1953-1973	2	14	145	$ 3.3 million
Marine Tankers, Barges	1953-1963	7	95	117	$ 21.1 million
	1964-1973	8	166	145	$ 19.0 million
Total	1953-1973	15	261	262	$ 40.1 million
Railroad Tank Cars	1953-1963	3	25	240	$ 2.0 million
	1964-1973	5	16	312	$ 9.0 million
Total	1953-1973	8	41	552	$ 11.0 million
Trucks	1953-1963	5	60	215	$ 10.0 million
	1964-1973	3	20	98	$ 0.0
Total	1953-1973	8	80	313	$ 10.0 million
Total	1953-1963	27	257	954	$ 79.9 million
Total	1964-1973	36	324	872	$185.3 million
Total	1953-1973	63	581	1,826	$265.2 million

b. Summary of Railroad Hazardous Material Incidents Involving Large Evacuations, 1965-1973

Summary of Railroad Hazardous Material Incidents Involving Large Evacuations, 1965-1973

Commodity	Number of Incidents	Number of Incidents With Explosions	Number of Incidents With Fires	Number of Deaths	Number of Injuries	Number Known Evacuated	Number Evacuated/Incident
Explosives	9	2	3	-	35	8,850	1,264
Liquid Propane Gas	10	4	4	2	110	8,500	1,212
Industrial Gases	6	3	4	-	-	13,050	2,175
Chlorine	4	-	-	-	-	4,362	1,090
Industrial Inorganic Chemicals	13	1	2	9	42	9,640	803
Industrial Organic Chemicals	6	4	4	-	7	3,136	627

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IV. EXPOSURE DATA

A. Transportation

TRANSPORTATION EXPOSURE DATA *

1953 - 1973
(In Millions)

Mode	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Airlines											
Commercial											
Miles	657.1	689.8	779.9	869.3	976.	973.0	1030.3	979.9	969.7	1009.	1,094.5
Hours	3.3	3.3	3.7	4.0	4.	4.4	4.5	4.1	3.7	3.	3.6
Departures	3.1	3.1	3.3	3.5	3.8	3.6	3.	3.9	3.8	3.	3.8
General											
Miles	-	-	-	-	-	-	-	-	-	1964.	2,048.6
Hours	-	-	-	-	-	-	-	-	-	14.	15.1
Military USAF											
Hours	-	-	-	-	-	-	-	-	-	-	-
Railroad											
Total RR Miles	1,308	1,184	1,226	1,225	1,15	1,026	1,027	995	930	942	945
Pass. Miles	31,679	29,310	28,554	28,213	25,88	23,273	22,051	21,477	20,397	19,905	18,496
Pass. Service Miles	826	765	776	765	72	647	639	614	585	587	590
Marine											
Ton-Miles All Waters	-	-	-	-	-	-	-	-	-	-	527,483

Mode	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Marine (cont'd)											
Ton-Miles Domestic	-	-	-	-	-	-	-	-	-	-	480, 576
Truck											
Miles	104, 633	105, 844	111, 387	111, 500	113, 206	115, 470	123, 154	126, 409	128, 584	133, 289	141, 873
Ton-Miles	217, 163	213, 225	223, 254	248, 846	254, 174	255, 544	288, 519	297, 662	313, 304	331, 319	347, 865

TRANSPORTATION EXPOSURE DATA *

1953 - 1973
(In Millions)

Mode	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	
Airlines											
Commercial											
Miles	1,189	1,353	1,482	1,834	2,146	2,385	2,418	2,381	2,348	2,457	
Hours	3.8	4.1	4.2	4.9	5.5	5.9	5.8	5.7	5.7	5.9	
Departures	3.9	4.2	4.4	4.9	5.3	5.4	5.1	5.0	5.0	5.1	
General											
Miles	2,181	2,562	3,336	3,439	3,731	3,926	3,207	3,143	3,400	3,500	
Hours	15.7	16.7	21.0	22.2	24.1	25.4	26.0	25.5	27.3	28.2	
Military USAF											
Hours	6.7	6.7	7.0	7.3	3.0	7.4	6.6	5.8	5.4	4.3	
Railroad											
Total RR Miles	991	930	940	895	876	864	839	784	781	-	
Pass. Miles	18,247	17,388	17,095	15,122	13,016	12,168	10,770	6,907	5,369	-	
Pass. Service Miles	599	593	602	570	552	540	520	482	512	-	
Marine											
Ton-Miles All Waters	542,519	545,339	565,02	570,080	580,79	586,32	658,952	654,764	670,019	-	

Mode	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	
Marine (cont'd)											
Ton-Miles Domestic	488,829	489,803	507,085	515,388	520,633	528,897	596,195	593,164	603,542	-	
Truck											
Miles	148,410	171,436	173,905	182,456	196,551	206,680					
Ton-Miles	370,500	359,218	380,917	388,500	396,300	404,000					

*Sources:

Accident, Accident Rates, etc., National Transportation Safety Board
Accidents, Fatalities, etc., National Transportation Safety Board
Chronologies of Air-Transport Events, Handbook of Airline Statistics
Computer Printout, U.S. Air Force
Accident Bulletin, Federal Railroad Administration
Waterborne Commerce of the U.S., Part 5, National Summaries
American Trucking Trends

B. Hazardous Materials

1. NUMBER OF CARLOADS OF HAZARDOUS MATERIALS CARRIED BY RAIL, TERMINATED*

SIC	Commodity	1965	1966	1967	1968	1969	1970	1971	1972
28	Chemical and Allied Products	1,478,496	1,590,893	1,612,783	1,660,286	1,669,585	1,608,681	1,525,135	1,539,549
281	Industrial, Organic and Inorganic Chemicals	826,501	867,172	828,601	858,368	864,004	816,022	777,364	792,954
2813	Industrial Gases (Compressed & Liquified)	115,901	123,380	31,811	35,359	35,930	34,643	32,249	35,156
2818	Miscellaneous Industrial Organic Chemicals	122,882	128,710	133,919	153,047	155,780	141,799	142,808	157,973
28184	Alcohols	30,832	30,487	29,664	33,411	34,384	30,172	27,878	29,651
2819	Miscellaneous Industrial Inorganic Chemicals	193,026	192,581	227,815	241,592	230,035	215,279	198,504	193,602
28193	Sulphuric Acid	49,366	49,491	50,665	52,762	53,715	50,638	46,361	48,427
2892	Explosives	6,749	9,748	17,177	20,767	22,916	14,006	9,056	9,133
29	Petroleum and Coal Products	770,245	728,203	6[illegible]1,179	673,492	712,886	698,172	644,675	908,179
291	Products of Petroleum Refining	681,378	644,955	6[illegible],684	589,000	559,350	518,772	470,832	463,048
29111	Gasoline	116,236	99,925	[illegible]1,264	76,679	64,635	51,684	41,250	36,069
2912	Liquefied Petroleum Gases	122,698	115,568	1[illegible]3,754	121,189	128,035	132,266	124,602	125,645

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*Source: Freight Commodity Statistics, Class I Railroads, ICC.

2. NUMBER OF TONS OF HAZARDOUS MATERIALS CARRIED BY RAIL, TERMINATED*

SIC	Commodity	1965	1966	1967	1968	1969	1970	1971	1972
28	Chemicals and Allied Products	70,824,433	79,126,869	83,71[illegible],368	89,574,329	94,890,594	94,854,902	94,208,127	98,193,766
281	Industrial, Organic & Inorganic Chemicals	42,897,012	46,332,684	46,52[illegible],332	50,378,239	54,310,441	53,279,905	53,130,083	55,866,362
2813	Industrial Gases (Compressed & Liquefied)	3,957,751	4,461,681	2,41[illegible],981	2,155,678	2,444,422	2,522,960	2,560,301	2,909,480
2818	Miscellaneous Industrial Organic Chemicals	5,902,717	6,448,656	7,18[illegible],533	8,712,420	9,493,066	9,092,791	9,687,214	11,144,396
28184	Alcohols	1,286,687	1,361,960	1,47[illegible],300	1,745,712	1,916,874	1,744,853	1,707,249	1,911,540
2819	Miscellaneous Industrial Inorganic Chemicals	10,589,730	10,733,746	11,65[illegible],061	12,635,293	12,999,960	12,708,759	12,273,391	12,400,032
28193	Sulphuric Acid	3,006,165	3,096,789	3,33[illegible],794	3,583,673	3,734,277	3,600,240	3,445,154	3,626,208
2892	Explosives	241,805	374,180	70[illegible],380	846,463	975,448	600,692	403,623	423,571
29	Petroleum and Coal Products	28,531,889	28,677,070	28,86[illegible],366	29,442,433	34,643,209	36,602,848	35,203,141	48,844,374
291	Products of Petroleum Refining	24,858,167	25,136,171	25,2[illegible],330	25,726,875	25,806,226	25,816,035	24,773,817	25,638,667
2911	Gasoline	3,802,196	3,375,144	3,18[illegible],159	2,749,312	2,396,289	2,016,037	1,715,659	1,549,863
2912	Liquefied Petroleum Gases	5,736,184	6,358,191	7,12[illegible],210	7,797,192	8,380,591	8,887,567	8,512,886	8,698,250

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*Source: Freight Commodity Statistics, Class I Railroads, ICC.

3. Hazardous Materials Transported by Rail, by Ton-Mile*

Commodity	No. of Ton-Miles (Thousands)
Industrial Organic Chemicals	5,220,674
Industrial Inorganic Chemicals	7,381,979
Industrial Gases	828,031
Chlorine	1,001,040
Liquefied Petroleum Gas	817,200
Explosives	98,640
Chemicals and Allied Products	37,270,200
Industrial Chemicals	22,743,150
Alcohols	997,150
Sulphuric Acid	412,080
Petroleum and Coal Products	10,204,104
Products of Petroleum Refining	7,105,825
Gasoline	280,707

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*Source: 1967 Census of Transportation

Hazardous Material	1965	1966	1967	1968	1969	1970	1971	1972
Chemicals and Allied Products (cont)								
Synthetic (man-made) fiber		2	3	4	2	13	24	52
Drugs (biological products, medicinal chemicals, botanical products and pharmaceutical preparations		125	99	49	38	41	59	93
Soap, detergents, and cleaning preparations; perfumes, cosmetics and other toilet preparations		386	291	222	199	228	285	316
Paints, varnishes, lacquers, enamels, and alliet products		491	148	100	112	128	124	118
Gum and wood chemicals		100	78	103	305	288	538	534
Nitrogenous fertilizer and fettilizer materials, manufactured		156	426	1,254	1,332	1,898	1.933	2,062
Potassic fertilizer materials		253	254	306	297	410	317	401
Superphosphate		1,704	1,376	831	515	1,011	901	640
Insecticides, fungicides, pesticides, and disinfectants		294	332	208	50	46	43	63
Fertilizers and fertilizer materials, nec.		470	1,077	1,509	1,857	2,579	2,685	2,581
Miscellaneous chemical products		1,201	814	988	1,748	918	981	749

Hazardous Material	1965	1966	1967	1968	1969	1970	1971	1972
Petroleum and Coal Products		203,417	191,991	190,587	190,019	224,566	239,037	255,023
Gasoline, including natural gasoline		79,536	68,835	63,802	62,814	71,150	78,295	74,887
Jet fuel		8,671	11,151	12,180	12,168	10,475	11,494	11,293
Kerosene		6,522	7,271	7,495	6,296	7,223	5,887	4,937
Distillate fuel oil		70,590	72,246	65,092	66,471	70,356	68,718	73,948
Residual fuel oil		18,447	11,663	20,426	22,152	42,320	52,096	66,443
Lubricating oils and greases		8,532	9,119	9,024	8,448	8,622	8,409	9,429
Naphtha, mineral spirits, solvents, nec.		3,483	4,103	4,967	4,246	6,155	7,595	5,707
Asphalt, tar, and pitches		4,747	5,245	5,732	5,045	5,272	4,929	5,798
Coke, including petroleum coke		-	204	231	277	556	559	554
Liquefied petroleum gases, coal gases, natural gas, and natural gas liquids		587	527	698	764	836	725	765
Asphalt building materials		132	111	136	141	175	146	119
Petroleum and coal products, nec.		2,170	1,516	796	1,195	1,426	1,811	1,143
TOTAL		304,639	316,585	321,341	325,002	382,556	387,732	376,400

*Source: Waterborne Commerce of the United States, Part 5, National Summaries

4. WATERBORNE DOMESTIC TON MILES: BY TYPE OF HAZARDOUS MATERIAL*

(In Millions)

Hazardous Material	1965	1966	1967	1968	1969	1970	1971	1972
Crude Petroleum		74,720	97,563	100,725	101,759	118,525	107,423	75,990
Crude Petroleum		74,720	97,563	100,725	101,759	118,525	107,423	75,990
Chemicals and Allied Products		26,502	27,031	30,030	33,225	39,466	41,271	45,587
Sodium hydroxide (caustic soda)		1,784	1,874	1,989	2,886	2,975	3,317	3,757
Crude products from coal tar, petroleum, and natural gas, except benzene and toluene		2,684	2,351	2,136	2,304	2,754	3,318	3,399
Dyes, organic pigment, dyeing and tanning materials		30	30	23	11	6	5	7
Alcohols		4,483	4,015	4,741	4,574	5,556	5,631	7,064
Radioactive and associated materials, including wastes		.2	1	13	14	.5	.2	4
Benzene and toluene, crude and commercially pure		986	1,824	2,411	2,474	3,472	3,263	3,478
Sulphuric acid		337	417	440	445	714	666	534
Basic chemicals and basic chemical products, nec.		9,681	10,384	11,743	13,430	15,624	16,210	18,468
Plastic materials, regenerated cellulose and synthetic resins, including film, sheeting, and laminates		1,229	1,121	880	557	745	857	1,062
Synthetic rubber		102	115	81	74	56	115	206

5. Hazardous Material Transported by Truck, by Ton-Miles*

Commodity	No. of Ton-Miles
Chemicals and Allied Products	15,529,250
Industrial Chemicals	5,431,200
Chlorine	11,640
Industrial Gases	193,990
Industrial Organic Chemicals	1,247,260
Alcohols	162,800
Industrial Inorganic Chemicals	919,300
Sulphuric Acid	139,380
Explosives	167,140
Liquefied Petroleum Gas	231,540
Petroleum and Coal Products	7,208,900
Products of Petroleum Refining	5,968,893
Gasoline	1,964,949

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*Source: 1967 Census of Transportation

6. Number of Petroleum Industry Truck Miles*

Year	No. of Miles (Thousands)
1964	458,600
1965	545,679
1966	536,672
1967	521,761
1968	529,687
1969	754,496
1970	757,348
1971	774,570
1972	827,551
1973	508,783

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*Source: Summary of Motor Vehicle Accidents in the Petroleum Industry for 1973.

7. NUMBER OF TONS OF HAZARDOUS MATERIALS CARRIED BY TRUCK

SIC	Commodity	1967	1968	1969	1970	1971
28	Chemicals and Allied Products	31,052,349	36,588,511	37,560,190	37,100,048	39,684,255
281	Industrial, Organic and Inorganic Chemicals	11,354,411	13,931,628	12,940,697	14,973,938	13,949,221
2813	Industrial Gases (Compressed and Liquefied)	822,631	1,005,361	652,501	715,601	621,184
2818	Miscellaneous Industrial Organic Chemicals	1,939,550	2,145,456	2,285,083	2,185,147	2,113,314
28184	Alcohols	536,208	677,750	679,964	666,268	592,454
2819	Miscellaneous Industrial Inorganic Chemicals	4,523,147	5,826,776	4,418,059	5,186,783	5,089,059
28193	Sulphuric Acid	3,480,091	4,781,040	3,159,292	3,336,197	3,178,372
2892	Explosives	653,006	790,810	731,102	513,310	669,195
29	Petroleum and Coal Products	95,274,083	100,227,276	106,307,524	236,802,594	109,509,428
291	Products of Petroleum Refining	91,091,305	96,625,995	102,941,730	233,605,874	105,121,411
2911	Gasoline	44,232,833	47,399,172	51,069,858	53,476,016	52,942,642
2912	Liquefied Petroleum Gases	4,579,072	4,786,460	5,148,867	5,805,540	5,261,818

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*Source: ICC Freight Commodity Statistics: Motor Carriers

8. NUMBER OF TRUCKLOADS OF HAZARDOUS MATERIALS*

SIC	Commodity	1967	1968	1969	1970	1971
28	Chemicals and Allied Products	1,737,609	1,959,858	2,092,816	2,036,203	2,123,895
281	Industrial, Ooganic and Inorganic Chemicals	546,065	617,774	645,754	678,440	700,988
2813	Industrial Gases (Composed & Liquified)	44,225	49,849	36,350	40,202	35,312
2818	Miscelaneous Industrial Organic Chemicals	100,171	115,31[illegible]	115,902	114,347	114,038
28184	Alchols	27,054	36,130	35,917	35,406	31,217
2819	Miscellaneous Industrial Inorganic Chemicals	160,290	194,985	203,809	241,958	228,074
28193	Sulphoric Acid	134,858	142,443	137,705	154,090	135,355
2892	Explosives	39,599	47,693	54,113	35,276	43,528
29	Petroleum and Coal Products	4,103,669	4,266,998	4,431,986	4,731,063	4,524,357
291	Products of Petroleum Refining	3,901,389	4,093,049	4,266,902	4,511,511	4,347,223
29111	Gasoline	1,823,916	1,919,735	2,005,438	2,095,358	2,057,274
2912	Liquified Petroleum Gases	252,664	241,307	239,612	281,488	301,681

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* Source: ICC Freight Commodity Statistics; Motor Carriers.

9. PIPELINE MILEAGE*

Year	Petroleum Pipelines	Natural Gas Pipeline
1953	179,023	446,350
1954	186,723	470,490
1955	188,540	496,740
1956	195,000	525,220
1957	201,800	548,820
1958	189,982	571,500
1959	190,463	599,830
1960	190,944	630,950
1961	200.543	658,960
1962	204,064	683,230
1963	NA	709,940
1964	210,867	736,220
1965	214,913	767,520
1966	218,039	799,570
1967	209,478	828,270
1968	216,596	861,640
1969	222,621	

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*Source: Petroleum Facts and Figures, pp. 215, 240.

C. Other

1. NUMBER OF CHEMICAL PLANTS, BY TYPE OF CHEMICAL*

	1954	1958	1963	1967
Industrial Organic Chemicals	275	334	464	488
Industrial Inorganic Chemicals	488	580	674	718
Industrial Gases	428	491	456	507
Alkalies and Chlorines	29	34	38	44
Explosives	74	77	68	92
Paints	-	1709	1788	1701
Agricultural Pesticides and Chemicals	-	337	340	344

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*Source: 1967 Census of Manufacturing

2. NUMBER AND CAPACITY OF OIL REFINERIES (OPERATING)*

Year	Number	Capacity (Barrels per Day)
1953	315	7,481,701
1954	308	7,782,103
1955	296	8,069,154
1956	294	8,380,801
1957	298	8,808,841
1958	289	8,939,907
1959	291	9,450,741
1960	290	9,543,329
1961	289	9,629,685
1962	287	9,812,248
1963	287	9,814,791
1964	282	10,063,164
1965	273	10,461,311
1966	267	10,171,159
1967	260	10,412,447
1968	270	11,172,694
1969	264	11,575,829
1970	262	11,882,393

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*Source: Petroleum Facts and Figures, p. 135.

3. NUMBER OF COAL MINES

Year	Number	Man-hours Worked (thousands)
1953	6671	
1954	6130	388,000
1955	7856	419,400
1956	8520	433,700
1957	8539	408,200
1958	8264	322,229
1959	7719	296,031
1960	7865	281,528
1961	7640	255,296
1962	7740	250,730
1963	7940	253,185
1964	7630	252,405
1965	7228	248,988
1966	6749	240,642
1967	5873	241,774
1968	5327	234,417
1969	5118	237,484
1970	5601	260,169
1971	5149	252,062

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*Sources: Minerals Yearbook, United State Department of the Interior, Bureau of Mines, 1953-1971, Vol. II., Fuels.

4. YEAR ROUND HOTELS WITH PAYROLL AND 25 OR MORE GUEST ROOMS*

Year	No. of Hotels	No. of Guest Rooms	Wtd. Occup. Rate
1954	11,367	1,092,470	.69
1958	11,141	1,096,558	.66
1963	10,234	956,799	.62
1967	9,575	887,104	.65

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*Source: Census of Business.

5. NURSING AND PERSONAL CARE HOMES*

Year	No. of Homes	No. of Beds	No. of Residents
1964	17,400	618,900	554,000
1967	19,141	846,554	
1969	18,000		815,000

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